

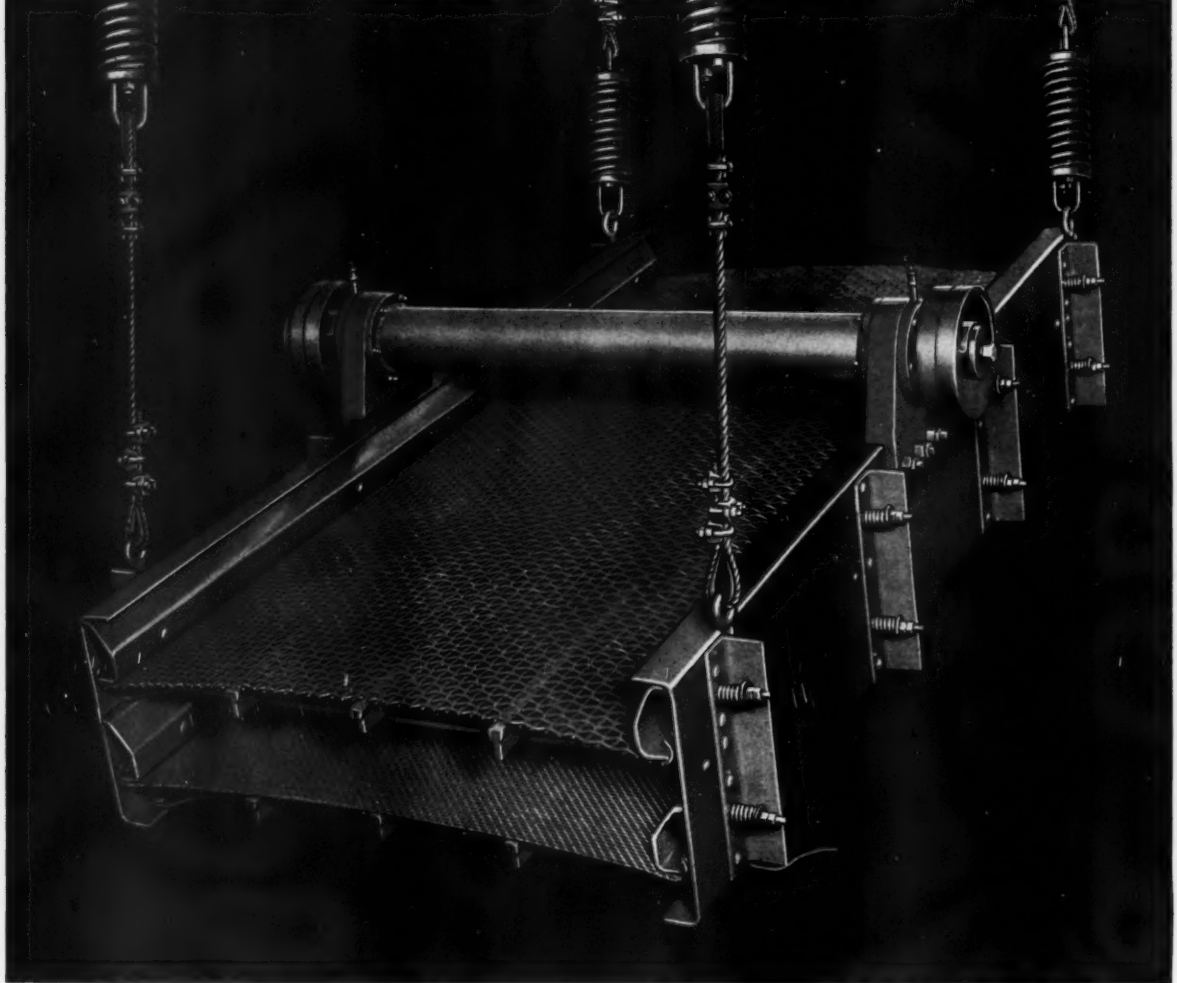
The MINING CONGRESS JOURNAL



SEPTEMBER

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1933

AERO-VIB SCREEN



A Light Weight . . . Rugged . . Low Cost Vibrating Screen

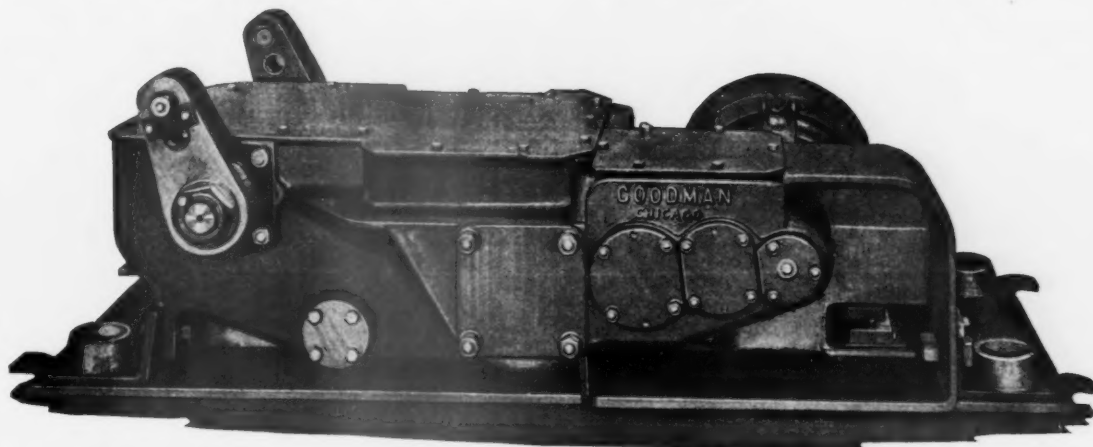
The Aero-Vib screen is suspended by cables and springs, confining all vibration to the body and material on the decks. It has a

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| Self-lubricating, Splash Feed | Drives Efficiently with Duckbill |
| All Gears Run in Oil | Most Effective Motion |
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| | |
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(63)



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C. B., '21.



THE MINING CONGRESS JOURNAL

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Field Representative

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The Great Traffic Officer

THIS OFFICE is in receipt of many letters, particularly from the far West, protesting against the alleged high-handed methods of the National Recovery Administration, in forcing its rules by threats of boycott and otherwise. These writers call for a return of the American spirit to resent these innovations upon time-proven practices which they believe threaten the existence of democratic government. What administration officials confess to be a great experiment, these writers insist is a revolution, more decided and complete than the changes made by Mussolini and Hitler. They seem to feel that these innovations compare more accurately with governmental changes in Russia and that the entire upset of social conditions now in process promise no better result than have been accomplished in the country of Stalin.

Most of these letters indicate that the wave of public opinion is overwhelming and that the protest is a matter of principle and not of hope.

This writer holds some very decided views as to the cause of the depression among which, except in small measure, he does not include Herbert Hoover nor the world war. At this time, the cause is a matter of small importance and the remedy the all-absorbing issue. We found ourselves in a great traffic jam with each day's customary traffic adding to the confusion.

Some one, by arbitrary methods, had to lead the obstructing element to an open space, in order that the next car in line might move out of the way of the succeeding car and that one after another driver, **EACH DRIVING HIS OWN CAR**, might get on his way and gradually permit all cars to move forward.

It is to be noted that the National Recovery Administration insists that each industry is to control its own operations (subject to the requirements of Section 7(a) of the Recovery Act as to hours and wages), and that industry will be allowed to agree not to sell at less than the cost of production plus a reasonable profit, and that selling below that reasonable price will be prohibited as an unfair trade practice.

This jam of public progress was so far-reaching and comprehensive that the most intelligent effort, supported by most drastic control, was necessary.

Like the ice jam in a river, it would melt away next summer, but dynamite is necessary to dislodge it now. There were well-fed people, many of them, who believed in waiting for relief until returning summer might melt the ice and thus overcome the difficulties. But the starving millions could not wait. The National Recovery Administration is the answer. General Hugh S. Johnson is the great traffic officer and, whether we like it or not, it is our duty to cooperate in every possible way until every man willing to work shall have opportunity.

To those who are unwilling to play the game with the administration;

To those who predict failure of this daring plan for relief;

To those who question the constitutionality of the Recovery Act and who propose a court test of its validity;

may we ask a question—

"What will happen in the event that the daring plans of the National Recovery Administration shall fail?"

Can any result be expected except chaos? A chaos immeasurably darker than any we have ever imagined? Must we not choose between chaos and recovery? Dare we face another period of wide unemployment?

The hope of the great majority of the American people rests with the National Recovery Administration. Its failure would find us struggling to get back to the conditions existing before these unusual plans were adopted.

This plan must be made to succeed as can be done only by the American people. We are, first, citizens of a representative government in which majority rule must be accepted. The people of the United States elected representatives who made this law and a President to enforce it. **IT IS THE BOUNDEN DUTY OF EVERY AMERICAN CITIZEN TO SUPPORT THE ADMINISTRATION.** Vote as you please at the next election, **BUT SUPPORT YOUR PRESIDENT NOW.** We all are in the boat drifting toward the falls below. We must land the boat or go over the falls to destruction.

The successful landing of the boat and the saving of its passengers can only be accomplished by "a long pull and a strong pull and a pull all together."





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The MINING CONGRESS JOURNAL

VOLUME 19
NUMBER 8



AUGUST
1933

A Journal for the entire mining industry published by The American Mining Congress

THE COPPER CODE

THE COPPER CODE is an example of splendid co-operation. Producers not only agree upon wages and hours of work but upon production control and allocation of tonnage.

Production is divided into three classes—class A producers having a productive capacity ranging from 68,000 tons to 366,500 tons annually; class B producers having a production from 36,000 to 45,000 tons annually; and class C producers having a production capacity from 15,000 to 25,000 tons annually. The spirit of "live and let live" presented by this code is unusual. The necessity of preventing exorbitant stocks now in hand from being so marketed as to entirely ruin the market and thus destroy the stability of the industry, has been guarded with skill and fairness.

The code limits the percentage of production to 20 percent of capacity of class A producers; 25 percent of class B, and 30 percent of class C. These restrictions are to continue until the present stocks shall have been reduced to 400,000 tons, at which time current production shall be automatically increased. It is agreed that no copper shall be sold at a price lower than the average cost of production.

As a model of fairness of the big producer for the smaller producers, of fairness to the consumer in providing copper at cost plus a reasonable profit, and the certainty that markets will not be demoralized by operation under this code, this industry is outstanding.

INTERPRETING THE CODE

IN PRACTICALLY every code submitted to NRA there has been a direct effort to interpret the controversial Section 7 (a) which relates to collective bargaining. The administration has now definitely ended that practice through the statement of General Johnson that the law is the law, and that any interpretation of it must be left to the legal department of the Government or to the courts for final decision. Nevertheless, there is a definite feeling on the part of industry that while the Act specifically provides for employees the right of organization, and collective bargaining through representatives of their own choosing, there is nothing in it that requires the recognition by the employer, of any labor organization, per se, and there certainly is nothing either expressed or implied that may be construed to require any employer to enter into formal contractual relations with a trade union.

In the automobile industry and in the coal industry this point is one of major interest. It is a question that must be definitely settled before there can be peaceful operation under NRA. Whatever the decision it must be clear cut and well defined or we shall be faced with a long period of continuous labor disturbances.

AN INVOLVED PROBLEM

NEMA'S VERTICAL CODE for the electrical industry has aroused some antagonism. There are those who insist that it must be revised and in some cases completely eliminated where certain industries are involved. Thus, the first of the machinery codes has caused confusion instead of clarifying the situation.

NRA officials are non-plussed with the aspect of codes as related to the machinery group. They are alarmed by the

vast number that this industry seems to feel is necessary. They estimate that if each group shall insist upon its own special code that there will be upwards of 5,000 presented and that the task will be insurmountable.

In the mining field there are many kinds and types of equipment. It is unthinkable from the efficiency standpoint that each of these units shall insist upon a special code and a special hearing. It is absolutely essential that in some manner all of these industries be coordinated into a mass code and that the problem of the administration be simplified. The Machinery and Allied Products Institute has made some progress in this direction. It still has far to go. Each of the groups in the mining field should get together as quickly as possible and try to coordinate their problem with other machinery manufacturers. Otherwise the cost to industry in gathering data will be prohibitive, the work of the administration will be hopelessly involved and the whole result will be chaos instead of orderly procedure.

WHAT IS FAIR TREATMENT?

DURING all of the commotion caused by NRA in its attempt to put industry's house in order, there has been a steady demand for the "Fair Treatment of Labor." Just what constitutes fair treatment? No one will attempt to deny that in some industries, and in many fields, labor has had the wrong end of the deal. There has always been, and probably always will be, individual selfishness. Our observance of this fact does not indicate it is entirely confined to that class of humans termed "capitalists."

By all means give labor a fair deal. But let us take care in arriving at that deal that we do not kill the enterprise which earns the money out of which labor must receive its deal. We can not eliminate selfishness by legislation. We cannot gain our objective by swinging the pendulum far to the left as both Germany and England have done, and giving unionized labor the whip hand. Reports from those countries indicate that a fair trial of that program has brought no greater prosperity than under the so-called capitalistic system. In fact just the reverse is true and at this time Germany is drastically curtailing labor's power and industry is finding itself turned over to the state to be controlled and operated by politicians.

It is laudible to strive for fairness in labor relations. It is equally important to strive for fairness to those who employ labor. If we can arrive at that much discussed point of "a fair wage for labor, a fair profit to capital and a fair price to the consumer," we shall have achieved fairness that really means something.

THE FIRST SESSION of the Seventy-third Congress will go down in history as a remarkable Congress. Its achievements were colossal in so far as legislative results are concerned. While it considered more than eight thousand bills and resolutions, it enacted into law but 77. This small number spoke with authority, however, particularly in terms of finance, for in all they carried appropriations of some four billion five hundred millions of dollars. In addition they established a form of dictatorship over industry, and made available the largest public-works program ever attempted. It will be many months before the performance of this remarkable session may be fully evaluated. Let us hope that its program is truly one of vision and wisdom; that industry may return to a state of prosperity; and that our workers may be fully employed.

MINING EVENTS

Gold and Silver

THERE has been considerable activity in the Gold and Silver Industries. With the agreement on silver at the World Economic and Monetary Conference, and the Presidential order prohibiting the exportations of gold bullion, gold coin and gold certificates, these metals were brought squarely into the national limelight.

The Treasury ruling permitting the export of gold concentrates, gold precipitates and amalgam apparently was regarded by the producers as good news. Gold mining companies with headquarters in San Francisco are planning to take immediate advantage of the ruling, and it is said that the entire output of some gold mining companies may be exported under the ruling either in the form of amalgam, precipitates or concentrates. Press reports indicate that two of the largest producers of gold are planning upon sending their entire output to English smelters.

THE Presidential order prohibiting the exportation of gold bullion, gold coin, and gold certificates, coupled with the enforced segregation of all of the country's gold in the hands of the federal authorities in conjunction with the general increase of production costs under the National Recovery Act brought almost consternation to the gold producing industry of the nation. After many appeals to the Treasury a ruling was issued to the effect that amalgam and zinc concentrates were not prohibited from export but this order excluded the products of the smelting and refining process. In view of the fact that smelter slimes and Parke crust occupy the same position with reference to bullion as to amalgam and zinc concentrates, a further appeal was made to the Treasury Department for a ruling excepting from the provisions of the embargo order these semi-finished products of the smelter industry known as gold mud and Parke crust. The American Mining Congress has continually urged that the export embargo should not apply to newly produced gold already suffering severe handicaps and that all of our newly produced gold should have the benefit of the world premium upon gold rather than be required to turn this material into the Mint at the regular fixed price of \$20.67. The increased price in world markets would undoubtedly set to work many small gold mining enterprises which cannot operate under present restrictions. Many efforts have been made on the part of Canadian smelters to induce the shipment of gold ores into Canada for treatment it being manifest that a smelter which can dispose of its product in the world market at approximately \$30 per ounce can pay a much larger price for the ore than a smelter whose price is limited to \$20.67. The net result of a continuance of this order will probably mean a discontinuance of the base metal smelters at Leadville and El Paso and perhaps others. The administration has been giving careful consideration to these appeals and it is hoped that a favorable conclusion will enable the smaller gold mining areas of the West to again begin operation.

Meanwhile the "grub-stake" idea is being pushed by those who are quite confident of its effectiveness. The Bureau of Mines has issued another helpful suggestion to small gold producers.

No industry wide effort has been made to develop a Code of Fair Competition for Gold and Silver, although various districts have given the subject consideration, as for instance the metal producers of Colorado, who recently met at Denver and developed a plan that they felt would meet their situation.

A committee of the gold operators of the West Coast is at work in San Francisco and it expects that as soon as the more

engrossing subject of embargoes upon the export of newly produced gold has been concluded that a Precious Metal Mining Code will be ready for submission.

IN THE silver world the most important development was the proposed agreement among eight nations to restrict the sale of silver for a four-year period which was signed by the delegates from those nations at the World Economic and Monetary Conference in London. This agreement among the delegates follows:

It is agreed:—

1 A. That the Government of India shall not dispose by sale of more than 140,000,000 fine ounces of silver during a period of four years commencing with January 1, 1934.

The disposals during each calendar year of the said four-year period shall be based on an average of 35,000,000 fine ounces per year, it being understood that, if in any year the Government of India shall not dispose of 35,000,000 fine ounces, the difference between the amount actually disposed of and 35,000,000 fine ounces may be added as additional disposals in subsequent years. Provided further that the maximum amount disposed of in any year shall be limited to 50,000,000 fine ounces.

1 B. Notwithstanding anything previously stated in this article, it is understood that if the Government of India should after the date of this agreement sell silver to any government for the purpose of transfer to the United States Government in payment of war debts such silver shall be excluded from the scope of this agreement.

1 C. Provided that when the total of the disposals referred to in paragraph "A" above, plus sales referred to in paragraph "B" above by the Government of India under this agreement shall amount to 175,000,000 of fine ounces, the obligations of the parties hereto shall cease.

2. That the Governments of Australia, Canada, the United States, Mexico and Peru, during the existence of this agreement, shall also in the aggregate purchase, or otherwise arrange for withdrawing from the market, 35,000,000 fine ounces of silver from the mine production of such countries in each calendar year for a period of four years commencing with the calendar year 1934.

The said Government undertake to settle by agreement the share in the said 35,000,000 fine ounces which each of them shall purchase or cause to be withdrawn.

3. That the silver purchased or withdrawn in accordance with Article 2 above shall be used for currency purposes (either for coinage or for currency reserves) or be otherwise retained from sale during said period of four years.

4. That the Government of China shall not sell silver resulting from demonetized coins for a period of four calendar years commencing January 1, 1934.

5. That the Government of Spain shall not dispose by sale of more than 20,000,000 fine ounces of silver during a period of four years commencing with January 1, 1934. The disposals during each calendar year of the said four-year period shall be based on an average of 5,000,000 fine ounces per year; it being understood that if in any year the Government of Spain shall not dispose of 5,000,000 fine ounces the difference between the amount actually disposed of and 5,000,000 fine ounces may be added as additional disposals in subsequent years, provided further that the maximum amount disposed of in any year shall be limited to 7,000,000 fine ounces.

SENATOR KEY PITTMAN, of Nevada, representative at the World Economic Conference, in a radio address on August 18, said:

"While there was a failure of the conference to accomplish anything with regard to the removal of trade barriers, there was a remarkable accomplishment relative to silver and silver money. Let us understand, in the first place, that the tremendous depreciation in the price of silver was not due to natural causes. It was due to the adverse and selfish action of governments. It was due to an oversupply of silver not coming from the mines, but from the debasement, that is, taking part of the silver out of a coin and substituting a base metal, and the selling of the residue of silver on the market of the world. It was chiefly due, however, to the melting up of the silver rupee coins of India and selling this silver on the market of the world. India, since 1927, has sold on an average of 35,000,000 ounces of silver per annum. This may not seem much, but when you realize that the total mined silver produced in the world in 1932 was only 160,000,000 ounces, you will realize that it was an oversupply. That was not all. India had in its treasury, and now has in its treasury, because silver continued to flow back into the treasury, 400,000,000 ounces of silver that it may dump on the world at any time, in any amount and at any price.

"This threat of destruction of the value of silver caused other countries to debase and melt up, and sell, as bullion, their silver coins. The process was leading to the destruction of silver as money. The disastrous effect of this can be understood when we realize that over half of the people of the world, who have bought from us and who desire to buy from us, have nothing but silver money.

"And so by direction of the President, and on behalf of our delegation to the Conference, I introduced a resolution which provided, first, that as soon as practical, each government to determine the question for itself, and also to determine the gold ratio, gold should be reestablished as the measure of international exchange. That means that gold should be used in the settlement of international trade balances. It did not mean that any country was required, as far as its internal currency was concerned, to establish any form of gold standard.

"The other part of the resolution dealt with silver. It asserted that silver was the money of over half of the people of the world, and that it was necessary to enhance and stabilize the price of silver. It provided that all governments would forever abandon the policy and practice of deflating and melting up their silver coins; that they would replace as rapidly as practical small paper currency with silver coins; that they would refrain from legislation that would materially affect the world's market price of silver.

"The resolution originally provided that governments would recommend to the central banks that they carry a fifth of their legal reserves in silver. I withdrew this paragraph in the resolution because there are even now fifteen governments which carry more than one-fifth of their legal reserves in silver, and for the further reason that it was impossible to agree upon the price of silver, that is, its value at which it should be carried as a legal reserve. If the price of silver is enhanced and stabilized, it will be to the interest of all central banks to carry part of their legal reserves in silver and they will no doubt do it."

REPORTS that the decline in the price of silver is responsible for the world economic crisis are "wholly without scientific proof," according to a study published by the Brookings Institution. The consequences of the price fall in silver to the United States are "negligible," the report states.

Copper

THE chief concern of the copper producers has been the completion and presentation of their Code of Fair Competition, which is now before N. R. A. with whom it was filed August 17. The major features of the code are control of and allocation of production.

It classifies copper companies in three divisions and sets forth their annual capacity as follows:

Class A: Kennecott group, 336,500 tons; Anaconda group, 226,000 tons; Phelps Dodge Corp., 168,000 tons; United Verde Copper Co., 68,000 tons.

Class B producers are Calumet & Hecla, 45,000 tons, and Miami Copper Co., 36,000 tons.

Class C division, Magma Copper Co., 25,000 tons; United Verde Extension Mining Co., 24,000 tons; Consolidated Copper Mines Co., 21,000 tons, and Copper Range Co., 15,000 tons.

It states that the production quota for Class A producers shall not exceed 20 percent of their individual capacity. Those in Class B may operate on a 25 percent basis and Class C on a 30 percent basis.

The code further declares that on a vote of 65 percent of the tonnage of the productive capacity of the companies signing the code, the executive committee may decide to increase the production quotas.

PRODUCTION COSTS

"Cost of production" means the weighted average cost of the primary production of all primary producers signatory which shall include all expenses incurred in the production, marketing and delivery of copper, maintenance, depreciation, overhead and all taxes other than income.

Consumption of copper for any month for the purposes of this code shall be measured by the deliveries of copper from refineries to domestic consumers excluding shipments of copper to domestic consumers on consignment and deliveries of copper withdrawn from bond and scrap copper re-treated on toll, but including deliveries made from consignments to domestic consumers averaged over a period of two months immediately preceding the month in question.

WAGES AND HOURS OF LABOR

1. Employees shall have the right to organize and bargain collectively through representatives of their own choosing and shall be free from the interference, restraint or coercion of employers of labor or their agents in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

2. No employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing or assisting a labor organization of his own choosing.

3. Employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment approved or prescribed by the President.

It is understood that satisfactory existing relationships between employees and employers shall be permitted to continue; nothing herein contained shall be construed as denying to the individual employee the right to bargain individually for the terms and conditions of his employment.

4. The operation of concentration mills, smelters and refineries is continuous throughout twenty-four hours per day and seven days per week, and daily work is divided into three shifts of eight hours each. The operation of underground mines, as a matter of safety for the men, requires the miners on each working face to have a continuing detailed knowledge of the conditions of ground and timbering. In mines the work day is divided into two shifts of eight hours each. The time periods between shifts for blasting and reconditioning of air and the time involved in change of shifts, as well as the special conditions in mining, make impracticable a decrease in the length of each shift or an increase in daily shifts.

5. On and after the effective date the maximum number of working hours for employees shall be eight (8) hours per day and forty (40) hours per week averaged over a three (3) months period.

WAGE RATES

6. On and after the effective date the minimum wages for unskilled labor shall be at the rate of 35 cents per hour except in the following cases:

The minimum rate for common labor in Arizona and New Mexico shall be 30 cents per hour.

7. Employees incapacitated through old age or physical condition for whom provision is made on a semi-pension basis, are not included in Paragraphs 5 and 6. It is agreed that such employees shall not be paid less than 80 percent of the minimum rates prescribed in Paragraph 6 and that the total number of such employees at operating properties shall not be more than 5 percent of the total days-wage employees in the plant in which they are employed.

8. No person under 16 years of age shall be knowingly employed.

9. (a) Office and salaried employees, receiving less than \$35 per week shall work not more than 48 hours in any one week and not more than 40 hours per week averaged over a six months period.

(b) The Minimum wages of office and salaried employees shall not be less than at the rate of \$15 per week.

10. Each employer shall spread employment so far as practicable for the purpose of distributing the employment available from time to time among as large a number of persons as possible.



The Hatching of the Blue Hawk.

PRIMARY PRODUCTION

A. Each of the parties hereto which owns, controls or operates a copper mine agrees to limit its primary production as hereinafter provided, from and after the effective date of this code, such limitation being necessary due to the existence in the United States of excessive stocks of copper.

For the purposes of this code, the relative respective productive capacities of the primary producers are hereby agreed to as follows:

| | Tons per Annum |
|---|----------------|
| Class A Producers— | |
| Kennecott Group | 336,500 |
| Anaconda Group | 226,000 |
| Phelps Dodge Corp. | 168,000 |
| United Verde Copper Co. | 68,000 |
| Class B Producers— | |
| Calumet & Hecla Consol. Copper Co. | 45,000 |
| Miami Copper Co. | 36,000 |
| Class C Producers— | |
| Magma Copper Co. | 25,000 |
| United Verde Ext. Mining Co. | 24,000 |
| Consolidated Coppermines Co. | 21,000 |
| Copper Range Company | 15,000 |

"Class A Producers" shall include those producers having an annual productive capacity as listed in the above schedule in excess of 45,000 tons per year. "Class B Producers" shall include those producers having an annual productive capacity in excess of 25,000 tons and not more than 45,000 tons per year. "Class C Producers" shall include those having a capacity of 25,000 tons per year or less.

B. Within twenty days after receipt of an application therefor, the executive committee provided for in this code shall fix a productive capacity for any primary producer not listed above. Such application shall provide that upon acceptance by the applicant of the productive capacity as fixed by the executive committee such applicant shall become a signatory to this code.

OUTPUT ADJUSTMENT

C. During the effective existence of this code the percentage of production (i. e., production quota) shall not (except as hereinafter provided) exceed 20 percent in the case of any Class A Producer, 25 percent in the case of any Class B Producer and 30 percent in the case of any Class C Producer subscribing to this code, unless and until

1. The executive committee shall, by an affirmative vote of not less than 65 percent of the tonnage of the productive capacity of the signatories hereto, decide to increase production; or

2. Physical stocks of U. S. duty free refined copper at refineries in the United States of America, as reported by the Copper Institute, shall have been reduced to 400,000 tons or less, at which time total current production shall be automatically increased to a point where total monthly productive quotas of primary producer signatories hereto plus all other production for said month of both primary and secondary copper shall equal:

(a) 75 percent of consumption until stocks are reduced from 400,000 tons to 350,000 tons;

(b) 80 percent of consumption until stocks are reduced from 350,000 tons to 300,000 tons;

(c) 90 percent of consumption until stocks are reduced from 300,000 tons to an amount which shall equal the consumption for the three prior months;

(d) Thereafter 100 percent consumption.

D. When and if by a 65 percent tonnage vote as hereinbefore it is decided to increase the percentage rate of production, or if there is an automatic increase, as provided in "C" above, it is understood and agreed that except as limited in "E" below, Class B Producers and Class C Producers shall at all times have the right to produce respectively at a 5 percent and 10 percent higher percentage of productive capacity than Class A Producers. For example, when Class A Producers have the right to produce on a uniform 40 percent capacity basis, then Class B Producers shall have the right to produce on a 45 percent basis and Class C Producers on a 50 percent basis. When the respective production rates shall (under the provisions of C (1) hereof) have been increased above the minima they may again be reduced by a 65 percent tonnage vote but in no case below the minima.

PRICES AND SALES

The sale of copper below cost, reasonably and properly determined, is an unfair method of competition. No sales of copper by copper producers as defined shall be made at a price lower than the weighted average cost of production of primary copper in the United States by producers signatory hereto. Such weighted average cost of production shall be determined in the first instance in a manner prescribed by the executive committee, and the Administrator of the National Industrial Recovery Act may review from time to time the correctness of such determination. No sale of copper shall be made for delivery further ahead than the third month following the month of sale.

In commenting on this code, the American Metal Market says:

"What is probably the most important feature of the copper code and certainly an

important regulator of future sales prices, is the "weighted average cost" of production. No one in the industry professes to have advanced knowledge of what this may amount to for the first three months' period but some say they will be greatly surprised if it is below 9 cents a pound while others state a minimum of 10 cents. Judging by the stability of the market in recent weeks on the 9-cent basis, it would appear that the more accurate appraisal of cost is 9 cents."

UTAH COPPER CO. RAISES WAGES

Wage increases ranging from 50 to 85 cents per day affecting 1,500 employees of the Utah Copper Co., mine and mills will become effective September 1. The new scale will bring the wage level to that prevailing between July, 1930, and October, 1931.

Lead and Zinc

THE important transactions of the month relating to Lead and Zinc production, are of course, the developments by the industries of their Codes of Fair Competition. Operators generally have been completely occupied with this subject, and codes are now before the N. R. A.

The code submitted by the Lead Industry represents 90 percent of the active lead mining companies and lead smelting and refining companies; 100 percent of the lead pigments and approximately 85 percent of the metallic lead products industries. The code has been developed under the direction of the Lead Industries Association, and its major provisions are as follows:

ART. II. (a) "Lead industries" as used herein is defined to mean all those engaged in the mining, smelting and refining of lead and lead scrap and in the manufacture of lead pigments, metallic lead products, and allied products defined under "metallic lead products."

(b) "Lead ore and Ore Concentrates" as used herein is defined to mean ore containing lead as the principal commercially recoverable constituent.

(c) "Lead mining" as used herein is defined to mean the mining and concentrating of ore containing lead and other treatment to the time of shipment to the smelter.

(d) "Lead smelting and refining" as used herein is defined to mean the processing of lead ore, concentrates, lead scrap, and other lead bearing material into pig lead or antimonial lead.

(e) "Lead pigments" as used herein is defined to mean basic carbonate white lead, basic lead sulphate, litharge, red lead, orange mineral, and other lead oxides with or without metallic lead content.

(f) "Metallic lead products" as used herein is defined to mean extruded, rolled, cast or otherwise worked lead or lead alloy products, or metallic tin, tin alloy or other metal or metal alloy products which are produced by the members of the Lead Industries Association on the same type of machinery and under similar labor conditions.

On and after the effective date, employers shall not employ any person under the age of 16 years, engaged directly or indirectly in production.

HOURS OF LABOR

No employees of the following divisions of the lead industry (except hoistmen, power house men and pump men in the mining division) shall be employed more than the maximum of forty (40) hours per week.

1. Lead mining division.
2. Lead smelting and refining division.
3. Lead pigments division.
4. Metallic lead products division.
5. Metallic foil products division.

Provided, however, that employees may average forty (40) hours per week over the period from the effective date until October 1, 1933, or over any of the successive thirteen (13) week periods ending respectively, December 31, 1933, April 1, 1934, July 1, 1934; provided further that the hours of labor in each period will not be in excess of a total of five hundred and twenty (520)

hours of labor; provided further that such maximum working hours shall not apply in case of accidents or emergencies where the safety of the men or the preservation of the property necessitates temporarily longer hours.

WAGES

No employees of the lead industry shall be paid less than 35 cents per hour unless the hourly rates of the same class of work on July 15, 1929, was less than 35 cents per hour, in which latter case not to pay less than the hourly rate of July 15, 1929, and in no event less than 30 cents per hour. Cleaners, watchmen and outside labor shall be limited to 5 percent of the total number of employees and shall be paid not less than 30 cents per hour. This paragraph establishes a guaranteed minimum rate of pay regardless of whether the employee is compensated on the basis of a time rate or a piece work performance.



IF HE CAN JUST GET THOSE HOOKS TOGETHER

THE American Zinc Institute has developed for the Zinc Industry a Basic Code of Fair Competition, and it was submitted to the N. R. A. July 28. It is anticipated that hearings will be started at an early date. The code provides as follows, and divides the industry into the following sections:

- (1) mining; (2) prime western smelting; (3) high grade zinc; (4) secondary zinc; (5) rolled zinc; (6) zinc oxide; (7) lithophone; (8) sulphuric acid.

In the mining division of the zinc industry, the several mining districts, are defined as follows:

Eastern District—New York, New Jersey, Pennsylvania. **Southern District**—Virginia, Tennessee. **Mississippi Valley District**—Wisconsin, Illinois, Missouri, Kansas, Oklahoma, Arkansas. **Northwestern District**—Colorado, Utah, Nevada, Montana, Idaho, Washington, Oregon, California. **Southwestern District**—New Mexico, Arizona.

In the prime western smelting division of the zinc industry, the several smelting districts are defined as follows:

Eastern District—Pennsylvania, West Virginia. **Midwestern District**—Indiana, Illinois. **Southwestern District**—Kansas, Oklahoma, Arkansas, Texas.

III.

On and after the effective date, the minimum wage that shall be paid by employers in the several divisions of the zinc industry to any of their employees shall be as follows:

Mining Division. The minimum wage shall be at the rate of 35 cents per hour in the Eastern and Northwestern Districts and 30 cents per hour in the Southern, Mississippi Valley and Southwestern Districts.

Prime Western Smelting Division. The minimum wage shall be at the rate of 30 cents per hour for common or unskilled labor, and at the rate of \$2.75 per shift (of not to exceed 8 hours) for all other labor.

High Grade Zinc Division. The minimum wage shall be at the rate of 35 cents per hour.

Secondary Zinc Division. The minimum wage shall be at the rate of 35 cents per hour, except for cleaners and outside labor, for which the minimum wage shall be at the rate of 30 cents per hour.

Rolled Zinc Division. The minimum wage shall be at the rate of 35 cents per hour, except for cleaners and outside labor, for which the minimum wage shall be at the rate of 30 cents per hour.

Zinc Oxide Division. The minimum wage shall be at the rate of 35 cents per hour.

Lithophone Division. The minimum wage shall be at the rate of 35 cents per hour.

Sulphuric Acid Division. The minimum wage shall be at the rate of 35 cents per hour, except for cleaners and outside labor, for which the minimum wage shall be at the rate of 30 cents per hour.

IV.

On and after the effective date, employers in the several divisions of the zinc industry shall not operate on a schedule of hours of labor for their employees exceeding the equivalent of 42 hours per week when averaged over the period from the effective date until October 1, 1933, or over any of the successive thirteen week periods ending respectively December 31, 1933, April 1, 1934, July 1, 1934, etc., nor a total of more than 546 hours in any of these thirteen week periods. Such maximum working hours shall not apply in the case of accidents or emergencies where the safety of the men or the preservation of the property necessitates temporarily, longer hours; nor in the case of the mining division shall it apply to hoistmen, power house men or pump men. It is also recognized that in the mining division there are individual circumstances, such as shortage of labor or housing facilities, which, upon proper showing of facts in such cases, may call for special consideration by the National Recovery Administration and the working of a greater number of hours than herein prescribed.

They agree to the collective bargaining clause of the Recovery Act and not to employ minors under 16 years of age.

THE tungsten industry following closely the course of the business depression declined much more in 1932 than in the two preceding years. So serious were the difficulties that some tungsten ore sold for less than the duty levied on tungsten ore.

In 1932, 396 short tons of concentrated tungsten ore (reduced to an equivalent of 60 percent WO₃) produced in the United States, were sold, against 1,404 short tons in 1931. The value of the sales of tungsten concentrates declined from \$928,000 in 1931, to \$218,394 in 1932.

The production of tungsten concentrates in the United States during the past five years is shown in the following table:

CONCENTRATED TUNGSTEN ORES (reduced to an equivalent of 60 percent WO₃) PRODUCED IN THE UNITED STATES, SOLD IN 1928-32, AND AVERAGE PRICE PER UNIT

| Year | Short tons | Value | Average price per unit |
|-----------|------------|-----------|------------------------|
| 1928..... | 1,208 | \$753,900 | \$10.40 |
| 1929..... | 830 | 654,000 | 18.13 |
| 1930..... | 702 | 509,000 | 12.09 |
| 1931..... | 1,404 | 928,000 | 11.02 |
| 1932..... | 396 | 218,394 | 9.20 |

Tungsten imports for consumption during 1931 and 1932 have been as follows:

Quicksilver

QUICKSILVER producers from every State in the United States, at a meeting held on July 18, in San Francisco, organized the National Quicksilver Producers Association, approved a constitution and by-laws, elected officers, adopted a code of fair competition, maximum hours and minimum wages for the industry and established headquarters at 460 Sacramento Street, San Francisco, with Irving Ballard as secretary. Since then the association has filed its code in Washington and is engaged in collecting full data on costs throughout the United States.

Following the adoption of the constitution and by-laws, H. W. Klipstein of San Francisco, was elected president. On taking the chair he called for the nomination of other officers. The following vice presidents representing the various states were elected:

Howard Perry, Texas, first vice president; Robert M. Betts, vice president for Oregon; F. B. Prescott, vice president for Washington; H. E. Loufek, vice president for Nevada; Noel C. Stearn, vice president for Arkansas; W. D. Burcham, vice president for Texas; Sidney Spitzer, vice president for Arizona; Irving Ballard, secretary and treasurer.

The following councillors, who with the officers being ex-officio members of the board, were elected: William R. Moorehead, San Francisco, chairman; F. A. Hammer-smith, San Francisco; George Gamble, Palo Alto; E. J. McCauley, San Francisco; Ellard Carson, San Luis Obispo; Charles Cavignero, Cloverdale; S. N. Schuette, San Francisco; E. J. Blumsted, Middletown; Henry W. Gould, San Francisco and Worthen Bradley, San Francisco.

The Code of Fair Competition as submitted calls for the following:

I—MAXIMUM HOURS OF WORK

The industry agrees that 40 hours shall comprise "an average work week designed so far as possible to provide for such a spread of employment. In addition, emergencies due to such causes as unforeseen absence of an employee or any condition that requires the work of extra or experienced men to prevent danger to employees or to the plant, may be handled by overtime work, but regular overtime should not be permissible from any cause."

II—MINIMUM WAGE SCALE

The industry agrees that the following minimum wage scale shall be in effect under the provisions of the Act in meeting the requirements that "(b) minimum wage scales should be sufficient to furnish compensation for the hours of work as limited, sufficient in fact to provide a decent standard of living in the locality where the workers reside." The minimum wage scale for any unskilled employee shall be at the rate of \$15.00 per week in the North and West, including Arizona, for an average of 40 hours of labor.

III—FOREIGN COMPETITION

As foreign quicksilver has been continuously imported into the United States in large quantities and sold at prices far below the cost of domestic production, and as the purpose of the National Recovery Act will increase costs of domestic production in respect to increased costs of labor, supplies, and higher taxes, it is inevitable that conformance with any code written in the spirit of the Act would make impossible operation at profit and tend to reduce labor employment through forced shutdown of domestic producing units, unless protection is given under the Act against low cost and low priced foreign competition. The industry therefore agrees that this code shall be effective only after adequate protection against foreign competition has been granted.

IV—SALE OF QUICKSILVER

All references in this code pertaining to quicksilver are based on a standard flask of 76 lbs. 1 oz. net weight avoirdupois.

Sound economic principles require the

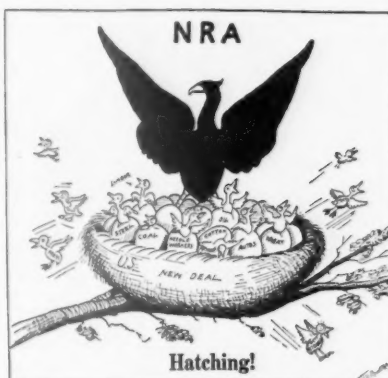
sale of quicksilver at such a price as will realize to the producer the cost of production plus a fair margin of profit. The conditions in this code are based on a representative production cost of the entire industry.

Cost of production shall be computed in accordance with standard accounting practice and the rules and regulations promulgated by the Bureau of Internal Revenue for the determination of Federal Income Taxes.

This Association shall, from time to time, develop fair and reasonable prices which are not below the cost of production and provide a reasonable margin of profit; such prices shall be based upon the cost of production and upon other competitive market factors.

Failure to maintain such prices when so developed shall be deemed a violation of this code. Producers operating under this code shall, if required, furnish this Association such information and reports as may be necessary to enforce this code.

A complaint and petition in relation to the code and the industry has been submitted to President Roosevelt, as follows:



"The petitioner, the National Quicksilver Producers Association, sets forth:

"First, That it has heretofore filed with the National Recovery Act administration a 'Code of Fair Competition,' as required by said Act.

"Second, That the terms of said code require an increase in its production costs of approximately thirty (30) percent.

"Your petitioner avers that the importations of quicksilver in large quantities from foreign countries are being made at a greatly increasing ratio to domestic production.

"Your petitioner further states that these importations during recent months have all but paralyzed the quicksilver producing industry of the United States and that present production is less than one-third of the domestic production of 1931.

"Your petitioner further states that there is grave danger that importations so rapidly increasing under the past too low costs of domestic production, will, at the higher domestic cost made obligatory under the new code, entirely overwhelm the domestic quicksilver industry in Texas, Arizona, Arkansas, Alaska, Washington, California, and Nevada, unless the President of the United States shall prescribe that the importations thereof shall be so limited as to prevent the absorption of our domestic market with foreign quicksilver, now being imported in such quantities as to make entirely ineffective the purposes of the Industrial Recovery Act.

Statement of Domestic Production in Flasks
1931-1932 and to July 24, 1933

| | 1931 | 1932 | To July 24, 1933 |
|---------------------------------|--------|--------|------------------|
| Production in the U. S. | 24,937 | 12,620 | 4,200 |
| Imports | 549 | 8,611 | 6,943 |

"With the increasing costs of labor and supplies, made necessary by the code which we have agreed to carry out, it will be seen that domestic production must entirely cease, unless the importations of quicksilver are curtailed.

"We, therefore, petition the President of the United States to take such steps as are provided by Section 3(e) of the Industrial Recovery Act, in order to effectuate the policy of such Act and to make it possible for the members of the National Quicksilver Producers' Association to so increase employment as to make effective the purposes of said National Industrial Recovery Act."

AT a meeting of the American manganese industry in Washington, D. C., August 8 and 9, attended in person or by proxy by 57 representatives of the manganese industry from 20 states, a proposed code for the manganese industry was adopted for presentation to the President for his approval.

The code provides minimum wages of 35 cents per hour in the Western and Northern states and 30 cents per hour in Southern states for a maximum 40-hour week.

The following is an extract from the minutes of the meeting:

"The industry code having been adopted on motion duly made, seconded and carried, it was *Resolved*, That the Manganese Industry hereby expresses its desire to cooperate to the fullest possible extent with the President of the United States and to assist him in his endeavor to bring into full force and effect, as quickly as possible, the beneficial effects of the National Recovery Act; that the manganese producers present at the meeting shall individually execute blanket agreements and forthwith submit the same to the President, pending the approval by the President of the industry code adopted this day, which, upon such approval, would supersede such individual blanket agreements.

"On motion duly made, seconded and carried, it was *Resolved*, That the American Manganese Producers Association do everything within its power to assist and further the efforts of the President in his endeavors to aid industry, labor and the welfare of the nation; and

"*Further Resolved*, That the members of the American Manganese Producers Association and of the manganese industry, not present at the above meeting, be notified of the action taken at the meeting this day, and that they be urged to execute and deliver to the President, as promptly as possible, individual blanket agreements pending the approval of the manganese industry code by the President."

THE total output of crude feldspar in 1932, including both potash and limesoda spars, was 104,715 long tons, 28 percent less than in 1931 and 50.3 percent less than in 1928, the year of peak production. The value of crude feldspar produced in 1932 was reported at \$539,641, against \$861,059 in 1931. Production of ground feldspar also declined sharply in 1932. Sales of domestic ground spar by merchant mills dropped from 132,542 short tons in 1931, valued at \$1,630,917, to 104,289 tons, valued at \$1,174,833 in 1932.

Bituminous

BITUMINOUS coal has held the national spotlight. Its code of fair competition now before NRA has attracted international attention. It is perhaps the most important of the codes, and involves greater differences of opinion than in any other industry. Its major problem is that of satisfactory labor relations, and obviously it is the only industry before the NRA where the question of unionization is so bitterly contested.

While 27 different codes were presented, only two are being given serious consideration. These are the so-called "North-South" (the Blue and the Gray) non-union operators representing some 70 percent of all the coal produced in the United States, and the general code group which represents all of the unionized operators in the country, in which code it is understood that the United Mine Workers of America were in approximate accord.

The hearings began August 9, and continued through August 12. Since that date committees representing the administration, the operators and the mine workers have been attempting to get together upon some general agreement that will be reasonably satisfactory to each group. At this writing (August 27) there is indication that a code will be forthcoming within the next week. The non-union operators have been negotiating with officials of the United Mine Workers, who claim to have credentials from every mining district. The points at issue have been hours of work; wages with proper differentials for various fields; and collective bargaining, including the check-off. The unionized fields have presented the plan of the 8-hour day, with the alternative of an average 36-hour work week. The miners desire a 6-hour day, and have discussed a 7-hour day. It is understood that the administration favors the 8-hour day. The non-union operators are standing solidly against the check-off, and this is the rock upon which they may finally split, and make it necessary for the President to write and enforce a code.

It now seems possible that there will be one code for the entire industry, with proper differentials between fields; wage contracts with the United Mine Workers of America; special consideration for far-lying districts such as the Rocky Mountain and Alabama districts; an 8-hour day; a base wage rate of \$5 a day for inside, and \$4 a day for outside labor; the establishment of a coal industry board to administer the code; the division of the industry into geographic sections; recognition of the collective bargaining provisions of the Act; a sales agency to establish a fair price for coal; a standard sales contract; and the elimination of the "unfair competition" methods that has long kept this industry near the verge of bankruptcy. Full consideration must be given to coal's competitive fuels.

IN ANNOUNCING the hearings the administration said:

"Plagued by the triple ills of overproduction, fierce internecine competition and a steadily contracting market, the bituminous coal industry will appear before the National Recovery Administration with 27 codes and a hope.

"Overproduction is its greatest problem. The potential capacity is around 750,000,000 tons annually. Actual consumption last year was only 305,000,000 tons. The peak production was during the World War, when approximately 600,000,000 tons were produced in a single year. Since then the decline has been rapid. Fuel oil for home heating has become an important competitive factor. Oil is now almost universally used by ships, providing a greater steaming radius. The remarkable development of natural gas resources and their piping over long distances, permits this fuel to be used extensively for manufacturing as well as home heating. Great hydro-electric developments have cut still further into coal consumption.



BITUMINOUS COAL CODE HEARING BEFORE NRA

"The most recent figures on bituminous production tell the story. During 1929, approximately 503,000 coal miners produced 534,000,000 tons. In 1930, 493,000 miners produced 467,000,000 tons. Last year 349,000 miners produced 305,000,000 tons."

This, then, sums up the tremendous problems of the industry, but leaves the most important—labor relations—untouched.



GENERAL HUGH S. JOHNSON

The hearings were impressive and colorful. Big industrialists, labor leaders, Government officials, guardians of the public interest, the press, women weighed down by the social miseries of humanity, negro laborers, casual observers, all rubbed elbows.

While the debate went merrily on, the labor group sat to the left of General Johnson in august array, beginning with Mr. William Green, secretary of the American Federation of Labor, closely followed by the powerful and forceful appearing John L. Lewis, ably seconded by Jett Lauck, and an interesting group of radicals, near radicals and conscientious labor folk.

To the right of Mr. Johnson sat the highly august group beginning with Deputy Commissioner K. M. Simpson; James Pierce, and the officials of the administration generally, including the President's special advisory board of distinguished men.

Congressmen glided in and out; secretaries were there in force, pencils busily engaged in taking down the instructive, entertaining, and sometimes highly humorous remarks. The Blue Eagle of NRA formed the background and was significant in this meeting with its bold statement "WE DO OUR PART."

General Hugh S. Johnson, in his usual forceful manner, opened the meeting, explaining and presenting the aims of the Recovery Act, and the necessity for cooperation. He was immediately followed by Attorney Donald A. Richberg, and Mr. Charles O'Neill speaking for the non-union operators.

Mr. O'Neill outlined the code which represented some 70 percent of all bituminous production. He gave much substantiating evidence, in advocacy of the 8-hour day, and defended manfully the right of the operator to remain an individual and not to transfer his business in toto to either Government or labor unions. He spoke effectively of the competitors of coal, and gave voluminous data including charts and figures to back up his statements.

Almost immediately the question of labor came into the limelight, and from that moment on the hearing was a battle of wits between Mr. O'Neill and Attorney Richberg. Both are clever men; Mr. Richberg is an excellent attorney, and obviously Mr. O'Neill knew his way about. The bone of special contention apparently was the fact that the operators developing the code had not consulted their labor. Mr. O'Neill stated that the code was developed through cooperation only in those matters presented in the code. That they were firmly of the belief that higher wages and shorter hours would open widely the doors of competition from oil and gas; that they could not agree upon a general labor provision, and that he, and the operators he represented, were of the opinion



K. M. SIMPSON

that labor negotiations must be a matter of individual company dealing; that they would not interfere with the workers dealing with United Mine Workers, but that they insisted upon the right to bargain collectively as operators, without agreeing to a standard union wage scale. He believed that there would of necessity be five or six codes for bituminous; that it would be foolish, unreasonable, and unprofitable for competing districts to agree upon one code. He could not understand why they should desire to do so. He pointedly stated that this group of operators insisted that they retain authority

over their own mines, and that Government officials under the Recovery Act, be supervisory, and in fact, largely devote themselves to data collections. This seemed to arouse Attorney Richberg. He pointed out that their code provided that the Government should merely be lookers-on, while the industry worked under the code, with no authority to say except by "commonsense rule" that certain practices were wrong. The general thought brought out by Mr. Richberg was that the operators believe that the consumer would be protected by the unbridled competition of oil, gas, and coal; that the worker would be protected by longer working periods at higher wages; and that the Government would add extensively to its already overlaid store of information on bituminous coal.

Mr. O'Neill gave the following interesting facts to substantiate the request for the adoption of the code he sponsored:

"In 1923 there were in operation 9,331 bituminous mines. In 1930 the number had declined to 5,891. In the former year bituminous coal furnished 63.5 percent of the total energy used in the country; by 1930 that percentage had declined to 55.7 percent. These figures show that between 1919 and 1929, hydrogenerated electricity, fuel oil and gas oil, and natural gas increased in use to such an extent that in the latter year they were displacing 122,000,000 more tons of bituminous coal than in the former year.

"According to Bureau of Mines report, each man engaged in the bituminous mining industry in 1932 produced 771 tons of coal. On that basis 155,642 men lost a year's employment in 1932 because of the decline in the consumption of bituminous coal, due to the use of rival sources of power."

The average mine realization per net ton in the past seven years has been as follows: 1926, \$2.06; 1927, \$1.99; 1928, \$1.86; 1929, \$1.78; 1930, \$1.70; 1931, \$1.54; 1932, for states east of the Mississippi River (the only figures available for this year from the U. S. Bureau of Mines), \$1.22. The decline in mine realization during these seven years has been over 40 percent.

The second day of the hearing presented the "General Code" sponsored primarily by the Illinois producers, but representing the entire group operating under the procedure of the United Mine Workers of America.



GEORGE B. HARRINGTON

George B. Harrington, president, Chicago, Wilmington and Franklin Coal Company, was spokesman for the union operators. He presented their code, and many arguments in favor of it. He asked specifically for ONE code which would include all producing districts, with separate divisions to cover the special conditions of these districts. He asked for the 8-hour day, and an average of 36-hours work per week, these hours to be so staggered as to help the industry meet its peak production periods. He made a strong plea for collective bargaining.

The main points emphasized in the ques-

tioning of Mr. Harrington related to (1) the desirability of one code for the entire industry; (2) the desirability for collective bargaining; (3) the increase in employment possible under the functions of the code; (4) the desirability of eight hours of work versus six hours of work, which is the main point of difference between the labor and operating groups in this code. The general code provides:

1. A coal industry board of five members.
2. Divisions of the industry into five sections—(a) Northeastern; (b) Appalachian; (c) Central; (d) Southwestern; (e) Western.
3. Eight-hour day.
4. Minimum rates of pay.
5. Collective bargaining.
6. Minimum coal prices.
7. Elimination of unfair competition.
8. Standard sales contracts.

The items of unfair competition as outlined substantially by both major codes are well known to the industry and briefly include the following practices:

- Minimum wages.
- Minimum price for coal.
- Consignment of unordered coal.
- Adjustment of claims with purchasers of coal.
- Prepayment of freight charges, adjustments, allowances, discounts, credits, and refunds.
- Predating or past dating of invoices.
- Gifts or bribes.
- Terms of sale.
- Misrepresentation or misleading information concerning character of any coal bought or sold.
- Unauthorized use of trade mark or trade name.

Attempting to induce breach of contract.

Mr. Frank E. Taplin, of Cleveland, defended the general code, and advocated a "Planning Board" to "consist of one representative of the bituminous coal industry, one representative of the oil industry, and one representative of the natural gas industry, one representative of the anthracite coal industry, and one representative, the ex-officio chairman, to be appointed by the administration, to be established in cooperation with the administrator in developing a plan for the coordination of such fuel industries, and to preserve the proper balance between productive capacity and consumptive requirements."

F. V. H. Collins, a member of the executive committee of the Rocky Mountain-Pacific Coal Operators Association, asked special consideration for his group on two counts: "High wage scales and high cost of production." He submitted a special code, and said he believed they should have an individual code because of isolated areas and specific conditions and seasonal requirements. His code represented 95 percent of the production of coal districts of the states covered. He advocated 8-hour day and was in agreement with the general bituminous code provisions, but desired special consideration for their district. He stated they expected, and welcomed the Government in helping them work out their problems and expected it to guide their activities.

Forney Johnston, Birmingham, Ala., attorney, presented the Alabama code and definitely asserted that his district would not, unless forced to, come in under any other code than that sponsored by them. He particularly objected to the general code as presented by the union operators. He stated that the code as developed represented 88 percent of the commercial production of Alabama and that just recently the wagon mine production had been added. He pointed out that 95 percent of the operators subscribing to this code owned their mines and are residents of the state of Alabama; that labor costs had increased 38 percent in the period beginning July 16 ending August 1, 1933, as compared to 1932. He believed that maximum wage had been attained for that district. The provision for a check weighman is covered by Alabama statutes.

He reported the extraordinary safety record of the DeBardeleben Coal Corporation and the very high standard they have been able to obtain together with the national recognition accorded their safety records. They were willing to accept the provision of limitation of child labor to 18 years. He cited the tremendous depths to which Alabama's coal industry has descended during the depression and pointed out they are at this time producing only about 37 percent of the peak of 1932. He was very vehement in his assertion to include the Alabama operators under the provisions of the general code would mean complete annihilation for the field and insisted that operators would not agree to any such inclusion.



J. D. A. MORROW

John L. Lewis spoke for the United Mine Workers of America; Claude Pearcy spoke for the Progressive Miners, and various labor groups presented views.

The following presents a list of all those appearing before the hearings. It is obviously impossible to report the full discussion; but we shall gladly send our readers copy of any individual remarks, upon request:

Mr. Charles O'Neill, vice president of Peale, Peacock & Kerr.

Mr. Duncan Kennedy, member of the executive committee of the Smokeless and Appalachian Coals Associations.

Mr. Courtenay Dinwiddie, representing National Child Labor Committee.

Mr. John B. Andrews, secretary, American Association for Labor Legislation.

Mr. Andrew B. Crichton, Coal Control Association of Georges Creek and Upper Potomac Fields.

Mr. Stephen Rausenbush, secretary, Pennsylvania Security League.

Miss Charlotte Carr, representing Department of Labor and Industry, of Pennsylvania.

Mr. Charles P. Leill, Consumers' Advisory Board of the Administration.

Mr. Roger N. Baldwin, American Civil Liberties Union.

Mr. George A. Laughlin, newspaper business, Wheeling, W. Va.

Mr. A. T. Althouse, A. T. Althouse & Co.

Mr. Arthur Hale, Commissioner, National Wholesale Coal Association, and the Coal Exporters Association of the United States.

Mr. J. S. Brennan, representing Somerset County Coal Operators Association.

Mr. F. V. H. Collins, member of the Executive Committee of the Rocky Mountain-Pacific Coal Operators' Association.

Mr. H. J. Weeks, representing Hand-Mined Bituminous Coal in Tennessee and Georgia.

Mr. Fred Hewitt, representing the International Association of Machinists.

Mr. John F. Adkin, representing the Preston County Coal Operators' Association.

Mr. A. W. Hawley, chairman, Preston County Coal Operators' Association.

Mr. Jake Ritter, president, Appanoose and Wayne County Operators' Association.

Mr. George B. Harrington, president, Chicago, Wilmington & Franklin Coal Company, Chicago, Ill.

Mr. Frank E. Taplin, representing Central Coal Association.

Mr. John L. Lewis, representing United Mine Workers of America.

Hon. David Lewis, Congressman from Maryland.

Mr. D. W. Buchanan, president, Old Ben Coal Corporation, Chicago, Ill.

Mr. Eugene McAuliffe, president, Union Pacific Coal Co.

Mr. Ward Guthrie, Prairie State Mining Co., Granville, Ill.

Mr. C. G. Stiehl, president, St. Clair and Madison County Coal Operators Association.

Mr. James Kerr, vice president, Potts Run Coal Co.

J. D. FRANCIS



R. E. TAGGART



Dr. Robert C. Weaver, director of research of the Negro Industrial League.

Mr. W. C. Shank, representing the Southwestern Coals.

Mr. Rice W. Miller, representing the Coal Producers' Association of Illinois.

Mr. W. C. Kane, representing the Wasson Coal Co., the Rex Coal Co., and the Sahara Coal Co.

Hon. Walter Nesbit, Congressman from Illinois.

Mr. Claude E. Percy, president, Progressive Miners of America, Gillespie, Ill.

Mr. C. F. Richardson, president, Western Kentucky Coal Association.

Mr. William Keck, secretary-treasurer, Progressive Miners of America.

Mr. Charles G. Hall, representing Coal Trade Association of Indiana.

Mr. William R. Bootz, representing Southern Indiana Coal Producers Association.

Mr. Harvey Cartwright, commissioner, Indiana Coal Operators Association.

Mr. John A. Maher, representing Coal Dock Operators on Lakes Michigan and Superior, St. Paul, Minn.

ACCORDING to U. S. Bureau of Mines the total production of bituminous coal in 1932 is estimated at 305,667,000 net tons, compared with 382,089,396 tons in 1931. The 1932 output was below even that of 1922, the year of the great strike, and below the depression of 1921. In fact, the demand for bituminous coal was the lowest since 1904.

In comparison with the year before the output of 1932 represents a decrease of 20 percent; in comparison with 1929, a decrease of 42.9 percent.

The year opened with 35,500,000 tons in the hands of commercial consumers. On July 1 reserves were 26,300,000 tons. December closed with stocks of 29,666,000 tons, a net curtailment of 5,834,000 tons for the year. Even at the reduced rate of consumption prevailing, the stocks on December 31 were sufficient for only 30 days and the tonnage was the smallest since the great strike of 1922.

Allowing for changes in stocks and for imports and exports, the year's consumption was 302,874,000 tons, against 371,869,000 in 1931.

The world production of coal of all grades in 1932, according to preliminary figures, was 1,120,000,000 metric tons, a decrease of 136,000,000 tons compared with 1931. Of the 1932 production, 170,000,000 tons was lignite, and 950,000,000 tons was bituminous coal and anthracite. In comparison with 1931 the output of lignite declined 5.6 percent, and bituminous coal and anthracite 11.7 percent. In no country was the decrease as great as in the United States. In 1929 the United States produced 35.4 percent of the total tonnage of coal and lignite, but in 1932 its share had fallen to 20.6 percent.

Anthracite

ANTHRACITE operators have been observers in the battle between the Administration and the bituminous operators in the development of their Code of Fair Competition. As yet no code has been presented for anthracite.

ACCORDING to the Anthracite Institute the total production of anthracite (which includes colliery fuel) for the week ending August 12, amounted to 889,000 net tons. This is an increase, as compared with production of the preceding week, of 5,000 net tons, or 5.62 percent. Production during the corresponding week of 1932 amounted to 666,000 tons.

The following data on production in 1932, is from U. S. Bureau of Mines:

"The year's production of Pennsylvania anthracite—including colliery fuel, washery, and dredge coal—is estimated at 49,900,000 net tons, against 59,646,000 net tons in 1931. Save for the great strike of 1902, this was the smallest output recorded in any year since 1890. In comparison with 1931, the production of anthracite declined 16.3 percent, against 20.0 percent for bituminous. An encouraging development of the year was the sharp reduction of anthracite in storage. At the beginning of the year the operators reported 3,073,000 net tons in their storage yards. A sharp drop during the first quarter was followed by the usual seasonal increase in preparation for the fall demand, but at the end of December the stocks on hand stood at 1,732,000 tons, a net decrease of 1,341,000 tons for the year. Stocks at the head of the lakes and in the yards of retail dealers were likewise drastically reduced. At the beginning of the year stocks on the lake docks stood at 632,000 tons, while on December 31 they were 389,000 tons, a reduction of 38 percent. While complete figures on retail stocks are not available, a canvass of a selected group of dealers believed to be representative of the trade as a whole shows that the draft on retailers' stocks was even more pronounced, the tonnage on hand at the end of the year being 45 percent less than on January 1.

"Allowing for exports, imports, and withdrawals from producers' stocks, the apparent consumption in 1932 was 50,545,000 tons, a decline of 13.5 percent from the previous year."

Shipments of anthracite for the month of July, 1933, as reported to the Anthracite Institute, amounted to 3,211,533 net tons. This is a decrease, as compared with shipments during the preceding month of June, of 300,849 net tons, or 8.57 percent, and when compared with July, 1932, shows an

increase of 433,906 net tons, or 15.62 percent.

Further increases in imports of British Anthracite at the expense of that from the United States resulted in a percentage of the total of 52.7 percent in the case as compared with 45.8 percent from the United States during the year ended June 30, 1933. For the previous year, the situation was reversed, with the United States supplying 65.5 percent of the Canadian requirements, and the United Kingdom only 32.6 percent. The total imports increased only 2.8 percent during the period.

Nova Scotia and Central Ontario were the only two provinces to show reductions in the use of Anthracite for the year ended June 30, 1933, as compared with that ended June 30, 1932. In both instances, importations from the parent country indicated increases, while those from this country declined.

The United States lost 544,030 tons, or 28.1 percent of its market in Canada, while the United Kingdom gained 635,839 tons, or 66.0 percent of its Canadian market, during the year ended June 30, 1933.

PRESS reports indicate an active increase in the anthracite field—they pointed out that:

"Thirty-one anthracite collieries in the Luzerne region, the largest number ordered to work in the past several months have started to operate.

"Glen Alden, Lehigh Valley and Pittston companies led the list of operating concerns with a total of 18 collieries ordered back to work. Among the Pittston company operations that have been placed on the work schedule is the Old Forge colliery which has been shut down for the past year. Eight hundred are employed at this plant.

"The principal reason for the increased working time is the result of tidewater distributors placing large orders well in advance of the expected September 1 price increase; this is expected here to boost the price considerably above the level fixed last spring when a blanket reduction of \$1 a ton was ordered.

"Since the substantial spring price slash monthly increases have absorbed 80 cents of the cut. The expected September 1 increase will probably be 20 cents."

Iron

THE iron mining companies of the Lake Superior region announce increases of wages and a regulation of hours of labor, designed to meet the requirements of the industrial recovery act. The first announcement was by the Cleveland-Cliffs Iron Company, followed by announcements from the Oliver Iron Mining Company, Pickands, Mather & Co., The M. A. Hanna Company, Republic Steel Corp., and some others. All of the companies made announcements during the week.

Effective July 17, surface employees at the iron mines, and including the open pits, were to go on an 8-hour basis instead of 10 hours. Hourly wage rates have been adjusted to increase present daily earnings about 10 percent. The 8-hour day for underground workers, and others heretofore on a 8-hour basis, is maintained. These workers receive an increase of about 15 percent in the hourly rate of wages.

In normal times the iron ore industry of the Lake Superior district provides employment for 12,500 to 15,000 men. The number affected by the wage increases at the present time is estimated at 7,000, and may exceed that number materially after August 1.

—Skilling's Review.

LEGISLATION

ALL ROADS lead to Washington and all avenues after arrival lead primarily to the Department of Commerce Building. While the N. R. A. holds the center of attraction, the White House runs a close second and the Bureau of Internal Revenue vies with each of these for the "customers." Never in the history of Washington—not even excepting War days—has there been such an influx of our citizens; never has there been such clamor and such confusion.

Unless the visitor to Washington can approach his problem through his trade association, he is very likely to spend many days attempting to ascertain just where he belongs. The N. R. A. headquarters are the acme of activity. Competing with the visitors are men with trucks running up and down the corridors, moving furniture and bringing in supplies. The halls are literally filled with persons trying to find where they belong, and after they do succeed in reaching a source of information they find that they are headed in the wrong direction and must start out all over again.

While President Roosevelt has been keeping in very close touch with the World Economic Conference and the United States foreign policy, he has found sufficient time to confer with leaders in the steel industry, in the lumber industry, in the coal industry—in fact, practically every industry that is in Washington in connection with its codes of fair competition. Not the least of the President's problems have been the questions of gold and silver and the persistent rumor that an aggressive policy of currency inflation is about to be initiated. On August 7 President Roosevelt held a conference with Professors George Warren, Cornell, and Harvey Rogers, of Yale University and James Warburg, monetary experts, which started anew the belief that early inflation is inevitable.

In the meantime, General Hugh S. Johnson perhaps has been the busiest man in the United States. Before him and his Deputy Commissioners have appeared the largest aggregation of capital and industry that the United States possesses, for during the month of August the steel and oil industries have received their codes, the lumber industry has been negotiating, and the bituminous coal industry has been making life most uncomfortable for the Administration.

The gravest problem that the Recovery Administration seems to be facing is the proper interpretation of the open shop or collective bargaining provision of the National Recovery Act. Its greatest difficulty apparently is in the

proper segregation of industry. The bituminous coal industry alone presented 27 different codes and asked the government to pass upon the merits of all of them and bring out one code that will be acceptable to each group. The machinery industry has presented another gigantic task for the N. R. A. and they estimate that 5,000 separate codes may be presented unless it is possible for some agency to coordinate all of these groups under one master code with specific recommendations for each major industry.

The provisions of the Recovery Act definitely provide for collective bargaining. This is a subject that has been one of serious contention between capital and labor for generations and is merely another way of saying "unionization." This provision of the Act has caused tremendous dissention and created no end of antagonism on the part of those industries that for many years have operated on the open shop plan.

On August 24, N. R. A. officials interpreted Section 7(a) relating to this problem, as follows:

"The plain meaning of Section 7(A) cannot be changed by any interpretation by anyone. It is the function of the Administrator and the courts to apply and to interpret the law in its administration; and no one else can assume this function and no official interpretation can be circumscribed, affected or foreclosed by anyone writing his own interpretation into the code or agreement. Such an interpretation has no place there and cannot be permitted.

Ban on "Open Shop"

"The words open shop and closed shop are not used in the law and cannot be written into the law. These words have no agreed meaning and will be erased from the dictionary of the N.R.A.

"The law requires in codes and agreements that employees shall have the right to organize and bargain collectively through representatives of their own choosing.

"This can mean only one thing, which is that employees can choose anyone they desire to represent them, or they can choose to represent themselves.

"Employers likewise can make collective bargains with organized employees, or individual agreements with those who choose to act individually; provided, of course, that no such collective or

individual agreement is in violation of any State or Federal law.

"But neither employers nor employees are required, by law, to agree to any particular contract, whether proposed as an individual or collective agreement."

Under this interpretation a new impetus and life is given to the unions, although at the same time it protects against aggression. In the mining field the question has long been one of bitter contention. This provision of the act has stood between the national code for the coal industry and the readjustment of that industry under the new law. General Hugh S. Johnson, who was recently humorously nicknamed "Old Leather Britches," has his ideas about the organization of not only industry but labor unions themselves. He is said to have radically different opinions as to how labor organizations should be set up—as, for instance, he has felt that labor should be organized by industry, rather than by trade, and that through the industrial labor organizations a federated union might develop. Needless to say, such a view is highly unpopular with the American Federation of Labor.

On August 5 President Roosevelt appointed a National Labor Board, which was created to mediate industrial disputes. Immediately upon the appointment of this board, it was called upon to act in connection with several strikes. So far, the board has been able to handle all of the questions that have been placed before it and has been able to get the men back to work. It is anticipated that during the consideration of the codes and immediately following, this board will be one of the most active in the administration because it is fully expected that there will be many labor strikes pending a complete settling down to work under the codes. One of the major strikes settled by this board was that in the Pittsburgh district, where approximately 20,000 miners were out but who went back to work upon the President's promise and guarantee of a square deal. Early in August the Labor Department re- (Continued on page 22)



MODERN MINING PRACTICE

Planning Electrical Equipment for the New Coal Mine

Digest of Paper by Carl Lee, Peabody Coal Co., in "Mining and Metallurgy," August, 1933

WITH the modern trend toward motor drive in coal mines, more careful forethought should be given to future layouts than has usually been done in the past. Both top and bottom equipment of future new mines is likely to differ radically from those of a decade ago. No one is able to predict very far ahead, but provisions can be made to allow for uncertainty. One thing stands out: the mine of the future will be laid out for long life compared to that of the small mine of the past, where an inexpensive top plant, simple equipment, a small timbered shaft, small cars, light rail, hand loading and mule haulage all contributed to a short economical life.

In a large mine it is economically unsound to try to transmit the necessary power to the distant workings at a low voltage. Hence, a mine which is to generate its own electric service should plan for a future alternating-current generator so as to transmit high voltage to various substations. The mine which purchases electric power need not consider that, for the trend as the mine expands is to use less converting equipment in the power house. However, in the latter case, provision should be made for future feeder panels.

The trend today is toward complete mechanization. With that, the demand for power has greatly increased. With the experience of only a few years on mechanical loading, many desired changes can be visualized in track, pit cars, locomotives, and power supply. It is likely that in future mines, using mechanical loading, cars of eight or ten tons' capacity may be considered and installed. If a size such as that is used, then there should be a corresponding change in other equipment and methods of handling to obtain maximum efficiency. With such a large car, a wider track gage might be quite desirable.

For gathering work or servicing loaders, the heavy slow-speed locomotives will show up even more favorably than they have with small cars. For this service, the specially designed battery locomotive giving high tractive effort at slow speed and with low ampere drain on the battery will be applicable. These eliminate a trailing cable, which in congested entries is most troublesome.

At present, the mechanical loading operations are concentrated in centers of about half the area used in hand loading. Hence, the power requirements are more than twice as great for a given section. To meet these conditions, it is desirable that generating equipment be installed close to the load centers. These load centers advance rapidly, so the portable substation unit is the logical type to adopt. With these, the high voltage supply may be provided in advance and then when required the converting unit may be moved with a minimum of cost and time.

In the earlier mines, there was comparatively little underground equipment to be maintained electrically and mechanically. A crosscut sufficed to lay a single track over a pit and serve as a repair shop. In the mechanized mine, there are a large number of expensive units, such as track-mounted cutting and shearing machines, complicated loading machines, and a number of locomotives. In all of these the electrical and mechanical maintenance are so closely related that they are usually combined under one department, supervised by one man. To hold a uniform cost and to spread the work out so it can be handled efficiently by one crew assigned to this work, it is necessary that some piece of equipment be in the shop almost continually, for general overhauling.

In connection with the haulage of modern mines, the trend is toward heavier, faster and hence more powerful locomotives to take care of the larger cars, greater train loads and

longer distances. For such equipment to perform efficiently and safely, all curves or turns should be long and regular to permit good speed without trouble. Such track should be indicated on the projection and not left to chance for the machine runner or face boss, who happens to be on the job.

Thus, it is clear that a mine layout of 20 years ago would be inadequate for a modern mine. Then the power consumption underground for haulage alone was possibly 0.2 kw.-hr. per ton, the cutting possibly 0.4 kw.-hr. per ton, gathering 0.2 kw.-hr. per ton, totaling with idle day losses possibly 1.0 kw.-hr. per ton. Today, a totally electrified mine, including fan, hoist, and mechanical loaders, but without heavy pumping, may require 3 to 4 kw.-hr. per ton. The relative growth of the use of electric power is indicated by these figures, and the many and varied problems in conjunction with equipment causing that increase in power consumption have increased in proportion.

Efficient Air Compressing

Digest of Article by Lucien Eaton in "Engineering and Mining Journal," June, 1933

ALTHOUGH electricity has come into general use for driving underground machinery, compressed air still occupies first place as a source of power for rock drills and other equipment of intermittent operation. For work of this kind the safety and convenience of compressed air more than offset its higher cost. In terms of effective horsepower delivered, compressed air under the best conditions costs $2\frac{1}{2}$ to 3 times as much as electricity; if the pipe lines are leaky or undersized, the ratio is even greater. Pressure used has gradually increased during recent years, until 90 to 105 pounds per square inch is now standard. The latter pressure seems to be the economic limit in most mining operations, not because of decrease in effectiveness at the higher pressures but because this pressure is as high as most compressed-air machinery will stand without undue breakage. Air pressures up to 125 pounds are often used on special work, where speed is of first importance, but the increase in speed is usually obtained at the expense of maintenance. Experiments in drilling with compressed air at a pressure of 150 pounds have given gratifying results in respect to speed, but the resulting breakage of drill steel and drill parts was such that it more than offset the advantage of greater penetration. When strength of materials has been sufficiently improved, further increases in air pressure will follow.

Most of the air compressors used at mines are of the reciprocating type, driven by steam engines or internal-combustion engines or by electric motors. The electric-motor drive, direct-connected or belted, is the most popular.

Synchronous motors are particularly suitable for driving air compressors because they can be brought up to speed under very little load, and, as a consequence, they are extensively used. Most machinery at a mine is usually driven by induction motors, involving a strongly lagging power factor. If the synchronous motors on the air compressors are designed for a leading power factor, this condition will be largely overcome with beneficial results.

Except in the smaller sizes, nearly all air compressors now use "feather valves," consisting of light pieces of spring steel, with suitable support to keep them in place, and easily and quickly opened and closed. They have made large ports and high speeds possible, and have thus improved operating conditions for direct electric drive. Speeds as high as 220 r.p.m. are not uncommon.

The compressor intake sometimes draws its air from the engine room, but the pipe should preferably be extended through the wall of the building, then turned up until the opening is 8 or 10 feet above the ground, in a place where

the air is clean and reasonably dry. The diameter of the pipe should be not less than the diameter of the intake opening of the air compressor; if its length is more than 10 feet the diameter should be increased 1 inch for every 10 feet of length. The intake opening, covered or turned over so that rain or snow will not fall in, should be protected by a wire screen at least four times as large in area as the cross-section of the pipe, to keep out large particles of dirt or refuse without presenting much frictional resistance. If the air contains much sand or dust, a good plan is to filter it. When this is done the intake is surrounded by a screened room the walls of which consist of removable panels covered with cheesecloth, at least 1 square foot of cloth being allowed for every 25 cubic feet free air per minute of capacity.

Tests with Separate Ventilators for Cooling the Air at Warm Working Places

Digest of Article in "Colliery Guardian," August 4, 1933

THERE are three possible methods of keeping miners efficient at warm working places in coal mines, viz., (1) introducing cold air, (2) using drier air, (3) increasing the velocity of the air stream. The first two methods are only possible and economical where the increased expenditure involved increases the efficiency of any large body of men, but they would hardly pay at working points, such as pillar workings, where only a few men are engaged.

In a recent number of *Glückauf* (No. 16, 1933), Dr.-Ing. O. Muller and Dr.-Ing. H. Wohlbier, of the Breslau Technical College, describe some tests made by them, both at the college and in deep Silesian pits, with (a) a compressed air ventilating nozzle such as that suggested by Stoces in his book on "Combating High Temperatures in the Pit." This nozzle, widened out at one end, generates a local ventilating stream which, directed towards the workers, cools down the air; (b) a four-bladed Siemens industrial type fan of 16-inch diameter, arranged on a special suspension so that the fan moves continuously to and fro through an angle of 90 degrees.

The tests showed that both methods enhance the cooling effect of the mine air. The Stoces nozzle gives a greater increase in cooling strength than the electric fan. In its present form, however, the nozzle is too intense in its cooling effect, while its range is too restricted, although a slight modification in design would easily increase its "spread." In this particular respect the fan is far better, since, despite being set up eccentrically, it exhibits only slight differences in velocity over the 13-foot width of pillar over which the measurements were taken. The concentrated jet of air directed on to him by the compressed air nozzle might easily injure a man sweating at work in a warm working place. These defects are absent in the electric fan. The automatic swinging motion of the fan stirs up the air throughout the width of the pillar, and the air wafts freely around the body of the worker in much the same way as a slight wind does above ground. An additional advantage of the fan is that its mechanical parts are noiseless, and there is scarcely any noise from the air—important points when working on tall pillars.

With a suction air consumption of approximately 1,940 cu. ft./hr. at 57-pound pressure, the cost of the ventilating nozzles works out at 1.84d. (at par) for eight hours' working. The electric fan consumes 60 watts, and with current at 0.36d. a unit, the running cost for eight hours is roughly 0.18d.

Overhand Mining System with Scrapers

Digest of Article in "Mining and Metallurgy," August, 1933

A REVISION of the mining methods practiced by the Sherritt Gordon Mines, Ltd., at its Manitoba property is indicated in the last annual report of the company.

"As mining operations progressed toward the east, we began to get into that flat-lying part of the orebody where the broken ore will not run on the footwall. Under these conditions, our regular underhand stoping system is not applicable and we were forced to develop a different system for this part of the orebody.

"Using the same development layout as for our regular stoping system, we have developed an overhand system, using

scrapers to drag the broken ore into the boxholes, that is quite satisfactory. The benches are started at the bottom of the raise and driven horizontally along the bottom of the block of ore for a distance of 45 feet each way from the center line of the raise. As the raises are 120 feet apart, this leaves 30-foot rib pillars between 90-foot stope openings. These pillars are left to support the flat-lying hanging wall, but will be recovered later. A double-drum, air-driven scraping hoist is set up in a short hanging wall cross-cut over the center boxhole in each 90-foot stope opening. By changing the position of the head-block, along the top of the stope, we are able to keep the footwall scraped clean throughout the whole 90-foot opening."

Automatic Tramway for Refuse Disposal

Digest of Article by J. H. Edwards in "Coal Age," August, 1933

MODERNIZATION of refuse-disposal facilities at the No. 7 mine of the Fordson Coal Co., at Stone, Ky., was effected recently by the installation of a completely automatic two-bucket aerial tramway, storage bins for night dumping of rock and a self-dumping disposal car. The equipment replaces a single-bucket system, delivering refuse over a restricted area, which had grown inadequate and obsolete under present operating conditions. By an expenditure of approximately \$25,000, the company has substantially reduced operating costs, provided facilities for many years to come, and put itself in a position to earn a handsome annual return on the investment necessary to make the system fully automatic.

The tramway carries mine rock and tippie refuse from the tippie for a distance of 680 feet and up an elevation of 200 feet. The refuse is then dumped into the refuse car and transported on a track around the hill and dumped either parallel to or at the end of the track. To take care of rock loaded out of mine cars at the tippie at night and at the same time eliminate the employment of a night operator on the dump car, a 1,000-cu. ft. steel storage bin was erected at the bucket discharge tower at the top of the hill.

Automatic operation was assured by the use of automatic starting equipment on the hoist, volume or material-level switches in the tippie bin and in the hilltop storage bin, automatic batching equipment to load the buckets and an electrical control system for proper sequence of operation and for limiting travel. The sequence of operation is as follows:

When the small dump bin at the tippie is filled, a volume-control switch in this bin starts a reciprocating feeder if a tramway bucket is in loading position. The refuse is fed into a batcher supported on scale beams. When the batcher has been filled to a predetermined weight, the feeder stops and a Thrustor motor opens the bottom gate of the batcher in the proper direction. After an interval to allow the batcher to discharge into the bucket, the tramway hoist—located at the top of the hill—is started. The loaded bucket discharges into the hilltop storage bins. After another interval, the hoist begins operating in the reverse direction, provided feeder and batcher have filled the second bucket. Automatic operation of the tram continues until the hilltop storage bin is full enough to cause the volume switch to act or until the small bin at the tippie is emptied to operate the lower limit of its volume control.

The Morgan Interest in Mining

Digest of Article in "Mining and Metallurgy," August, 1933

IN THE Senate investigation of the affairs of J. P. Morgan & Co. it was disclosed that members of the banking firm are directors of 89 corporations and banks, with total assets of more than \$18,000,000,000. Among those with mining interests are the following:

Johns-Manville Corp.
Kennecott Copper Corp.
Beaver Coal Corp.
Stonegate Coke & Coal Co.
Lehigh Valley Coal Corp.
Cerro de Pasco Copper Corp.
De Bardeleben Coal Corp.

Texas Gulf Sulphur Co.
Phelps Dodge Corp.
Continental Oil Co.
U. S. Steel Corp.
Phila. & Reading Coal & Iron Corp.
Highland Coal Co.

HAVE YOU HEARD—?

SEVEN TONS OF SILVER was recently shipped to Turkey, being the first consignment of silver which the Turkish Government is purchasing in order to replace the paper notes of one Turkish pound. About 100 tons of silver will be purchased in all and the new coins will be struck at Istanbul.

DONALD J. RICHBERG, general counsel for the National Recovery Administration, recently stated that the long discussed revolution in the United States is actually underway. He pointed out that "Revolution by the sword and bayonet is nothing new. Revolution by the pen and voice is different. It is a revolution not in purpose but in method, yet so profound a change in method that our purpose may seem changed. The ideals that are written into the Constitution still guide this Government."

GENERAL HUGH S. JOHNSON, Recovery Administrator, recently had the following to say concerning the provisions of the Collective Bargaining Clause of the National Recovery Act: "As I understand it, an open shop is a place where any man who is competent and whose services are desired will be employed, regardless of whether or not he belongs to a union. That is exactly what this law says. The statute cannot be qualified. The law clearly states that there shall not be any requirement as to whether or not a man belongs to a union. Is anything clearer than that needed?"

MEXICO will mint \$5,000,000 in silver colons and about \$2,500,000 for Salvador. Central American governments expect to follow suit, and this is the first of the series under agreements with Costa Rica, Honduras and Nicaragua with Mexico for new silver coinage.

THE CIVILIAN CONSERVATION CORPS camps will be continued in full strength through this winter and spring, assuring 310,000 men work for six additional months, according to an article by President Roosevelt.

THIRTY-ONE PROMINENT GEOLOGISTS, comprising the Metal Mining Division of the International Geological Congress, visited the copper camps of Arizona, August 5 and 6.

THE CLEVELAND-CLIFFS IRON COMPANY has its entire fleet of 21 boats in service in the ore, coal and grain trade. This company operates the fourth largest fleet on the Great Lakes and is shipping its stock pile ore from Ishpeming and Negaunee, Mich., mines.

THE NATIONAL CONFERENCE ON FINANCING OF EDUCATION is asking for \$300,000,000 from the administration to be taken from the \$3,300,000,000 public works fund. They plan to use this sum in building schools throughout the country.

LABOR ORGANIZATIONS claiming a membership of 750,000 in New York City will serve the NRA as vigilantes in watching operations of codes of fair competition and reporting all firms not operating under the President's Reemployment Agreement.

FORTY SOVIET so-called trade experts and official delegations from Russia are to arrive in New York at an early date for the avowed purpose of purchasing a billion dollars' worth of American goods if the United States will recognize Russia.

THE UNITED STATES owns 24,317,020 automobiles out of a total in the world as of January 1, 1933, of 33,568,295. The country's ratio is said to be one car to every five persons.

DURING APRIL, MAY AND JUNE, Canada secured from Great Britain 72.4 percent of her anthracite requirements and the United States supplied 27.6 percent.

ACCORDING TO the American Bureau of Metal Statistics, world production of silver declined more than a million ounces in June, with declines in all leading producing countries. 141,948,000 ounces represents the annual rate based upon June production, which compares with 160,000,000 ounces produced in 1932 and 261,664,983 ounces in 1929.

THE AMERICAN ZINC INSTITUTE reports zinc stocks in the hands of American producers during July dropped 14,784 tons. Shipments in July aggregated 45,689 tons and production totaled 30,905. Practically this entire amount was shipped to domestic consumers.

THE RECONSTRUCTION FINANCE CORPORATION has authorized the purchase of \$2,800,000 worth of copper for the transmission lines from Boulder Dam to Southern California. These lines will be constructed with 1.4-inch copper tubes and are designed to carry greater electrical energy than any system now existing.

THE SEVEN INTER-MOUNTAIN STATES, through their annual Inter-Mountain Economic Conference, will hold an annual meeting at Colorado Springs, September 20-23, inclusive. These states are banded together as an economic unit through which planned production and development of their markets may bring to this district the profitable development which its industries warrant.

ACCORDING TO an article by Percy E. Barbour in a recent issue of *The Analyst*, the United States can produce more copper at 7 cents per pound than Africa can at 8 cents.

REPRESENTATIVES OF EIGHT COUNTRIES at the World Economic Conference signed a four-year agreement to restrict the governmental sale of silver and to increase its use for monetary purposes.

WORLD PRODUCTION OF GOLD is keeping on a very steady course, and the daily output for April, May and June is almost identical.

METALLIC MINERALS produced in British Columbia during first half of 1933 valued at \$12,407,984 compared with \$14,336,060 in like 1932 period, a drop of 13.4 percent, according to summary of Minister of Mines; gold production rose 22 percent to \$2,292,946 from \$1,881,137 in first six months last year.

GOLD PRODUCERS have appealed to President Roosevelt for relief against the embargo on gold shipments which forces the miner to sell his product at the standard rate of \$20.67 an ounce, when the market for gold throughout the world is at a far higher rate. The miners have asked for a modification or change in the present method of selling gold, so that the benefits of higher prices for their product may be enjoyed.

RETAIL FOOD PRICES in 51 cities of the United States, as reported to the Bureau of Labor Statistics, showed an average increase of about 8 1/3 percent on July 15 over June 15, and an average increase of less than 4 percent over July 15, 1932. The increase in purchasing power and reemployment ran close behind. While cost of living increased a little over 8 percent, purchasing power rose 7.9 percent and employment 7.2 percent. All of the 51 cities showed increases in the average food prices.

THE EXPANSION IN MANUFACTURING INDUSTRIES and in other branches of industry representing 89 of our principal industries was 21.9 percent greater in July, 1933, than the same period last year, while the payrolls were 28.5 percent larger. The increase in employment from June to July was 7.2 percent and payrolls 7.9 percent.

PERSONALS



L. S. CATES, president of Phelps Dodge Copper Company and a director of the American Mining Congress, was a Washington visitor early in August.

C. LORIMER COLBURN has resigned as secretary of the Colorado Metal Mining Fund and has established offices as a consulting mining engineer at 509 17th Street, Denver, Colo.

W. D. TYLER, of the Clinchfield Coal Corporation, has been appointed by Governor Pollard, of Virginia, for a seven-year term in the Engineers Section of Engineers, Architects, and Land Surveyors Board of the State of Virginia.

LEWIS W. DOUGLAS, Director of the Budget for the United States, received the honorary degree of Doctor of Laws by Harvard University on June 22.

THURLOW G. ESSINGTON and Mrs. Essington have been continuous visitors in Washington during the hearings on the bituminous operators' code of fair competition. Senator Essington is attorney for the Illinois operators.

J. R. KNAPP, Union Carbide Corporation, was in Washington during the month conferring on tax matters under the Recovery Act.

E. A. HOLBROOK, dean of the School of Engineering and Mines at the University of Pittsburgh, has been named Industrial Advisor to the Recovery Administrator during the consideration of the codes of fair competition for the bituminous coal industry.

T. H. O'BRIEN, general manager of the Inspiration Consolidated Copper Company, has returned to Arizona after spending some time in the East in connection with his work on unemployment relief.

MAX W. VON BERNEWITZ has left the service of the United States Bureau of Mines and with Mrs. von Bernewitz sailed from New York in July to their old home in New Zealand, where they will remain indefinitely.

PAUL WEIR, a director of the American Mining Congress and vice president of the Bell & Zoller Coal & Mining Company, has been in Washington continuously attending the various conferences on the bituminous coal code.

A. W. ARCHER, managing director, South Kirkby Featherstone and Hemsworth Collieries, Pontefract, England, a coal operator largely responsible for the British Coal Mines Act of 1930, was a Washington visitor during August, where he conferred with various members of the coal industry upon the situation in England in relation to the application of the British Coal Mines Act.

CHAS. W. MERRILL has been transferred from the Washington headquarters of the United States Bureau of Mines to San Francisco, Calif., where he will have charge of the Minerals Statistics Field Office.

DR. GEO. OTIS SMITH has resigned as chairman of the Federal Power Commission. He was formerly Director of the United States Geological Survey and was active in the work of the Coal Commission during its investigations.

ROBERT S. LEWIS of the University of Utah has returned to Salt Lake City after spending a month in the Timmins, Kirkland Lake, Noranda and Sudbury mining districts of Ontario.

MILTON H. FIES, vice president of the DeBardeleben Coal Corporation, has been appointed a member of the State Advisory Board for the administration of the Public Works Program of the N. R. A.

ISABELLA GREENWAY, widow of John C. Greenway, well-known copper man, was nominated by the Democratic party of Arizona to fill the vacancy occasioned by the resignation of Lewis W. Douglas as Congressman from that state.

GENERAL HUGH S. JOHNSON, Administrator, announced today that his assistant administrator, Edward F. McGrady, will, for the present, remain at his post with the National Recovery Administration. Mr. McGrady's appointment to be Assistant Secretary of Labor was announced today. Miss Frances Perkins, Secretary of Labor, has assigned Mr. McGrady to remain with General Johnson, until further notice, because of the many complex problems facing the National Recovery Administration.

CECIL FITCH has been elected president of the East Crown Point Consolidated Mining Company.

E. S. BASTIN has been elected president of the Society of Economic Geologists for 1933.

CHAS. E. BERWIND, vice president of the Berwind-White Coal Mining Company, and E. J. Newbaker, vice president and general manager for the Berwind interests, have been in Washington for the past two weeks in relation to the National Recovery Act as it relates to bituminous coal.

HARRY LAVIERS, who for some time has been assistant manager of the South East Coal Company, was recently appointed manager for that company, and Henry LaViers has been moved from the managership to vice president.

R. L. IRELAND, JR., vice president of the Hanna Coal Company, and chairman of the Coal Division of the American Mining Congress, has been active in the development of the code for the bituminous coal industry.

D. D. MUIR, of the United States Fuel Company, Salt Lake City, has returned to Salt Lake after attending the hearings on the coal code. Mr. Muir conferred with eastern officials of his company in New York and Boston.

EUGENE MCAULIFFE, president of the Union Pacific Coal Company, presented a brief to the N. R. A. in behalf of the Rocky Mountain coal operators at the recent coal hearing.

GEO. B. HARRINGTON, president of the Chicago, Wilmington and Franklin Coal Company, is spokesman for the Illinois operators in the presentation of the general bituminous code of fair competition.

HORACE MOSES has been promoted to the general managership of the Gallup-American Coal Company.

WILLIAM LOACH, president of the Wolf Tongue Mining Company, has returned to his home at Boulder, Colorado, after spending several weeks in Washington and Pittsburgh. With Mrs. Loach he visited the Chicago Century of Progress.

H. M. URBAN, manager of the Spruce Pine Mica Company, has been in Washington conferring with officials of the American Mining Congress concerning a code for the mica industry.

WINTHROP W. ALDRICH, president of the Chase National Bank, was elected a director of the Westinghouse Electric and Manufacturing Company at a recent meeting of the Board.

NEWS OF MANUFACTURERS

THE JEFFREY Manufacturing Company, Columbus, Ohio, announces an improved self-cleaning bar screen.

Some of the advantages of this new screen are:

A clear opening from side to side in the submerged portion.

The special hinged scraper prevents jamming of the mechanism from the accumulation of foreign material in the bottom of the channel or upon the screen.

Since the return runways are a considerable distance from the screen, the scraper enters the channel back of the accumulated refuse. At the final point of its descent the rake engages the bottom some two feet ahead of the screen. From this position the rake scrapes toward the screen with teeth dragging on the bottom—clears any accumulation in front of the screen—and comes up under the refuse in suspension.

The rake teeth pass entirely through the screen, cleaning not only the surface but also the spaces between the bars.

The control mechanism is such that the screen may be operated continuously or at intervals from two seconds to one hour. A differential float control can be furnished if desired.

Bulletin No. 571, which gives complete data, sent on request.

CATERPILLAR TRACTOR CO., of Peoria, Ill., have prepared two new folders giving specifications, information and model and action pictures on their No. 77 and No. 44 leaning wheel graders. The No. 77 is offered with either hand or full power control and is designed for use with the "Caterpillar" 70 or Diesel 75 tractors. The No. 44 grader is offered with hand controls only and is built to fit the "Caterpillar" 35 tractor which is now offered with either gasoline or Diesel engine. These folders may be obtained by addressing the manufacturers.

They also announce a folder covering the "Caterpillar" Diesel 35 tractor, the latest addition to the "Caterpillar" line, and the design, construction details and complete specifications of the "Caterpillar" 70 tractor are given in a new catalog.

BETHLEHEM STEEL COMPANY has developed a safety brake handle for use on extra-low and low-side mine cars. The end of the handle is formed in the shape of a square, so that when the brake is operated the hand grasping the lower part of the square grip is protected, and cannot be caught between the top of the brake handle and the roof of the mine, which often happened with older handles. This safety brake handle is, of course, especially suited for use in low-seam mines.

AMONG THE NEW developments in mine protective headwear is the MSA Type "D" Skullgard. Made in a single piece of genuine laminated Micarta, this mine cap is lighter in weight, yet offers maximum protection against falling coal and other head hazards encountered in mining operations. The use of Micarta also gives this cap distinctive, waterproof advantages as it cannot soften from mine water or perspiration. The shell is flexible at the base and is equipped with a special soft, rubber cushioned lining with fabric cradle straps which permits free ventilation all around the sides of the head and at the same time providing a shock resisting protection against heavy impacts of coal, rock or slate. This skullgard has already been officially approved by the Pennsylvania Compensation Rating and Inspection Bureau. A descriptive bulletin of this new development in head protection may be obtained by writing the Mine Safety Appliances Company, Pittsburgh, Pa.

A WELDLESS COUPLING LINK for mine cars, forged from a single piece of special steel, has been perfected by Bethlehem Steel Company, following more than two years of development work on coupling links and pins. The one-piece construction of this link, with a web in the center, makes it much stronger than the open-link type. It is made in four standard lengths, 10½ inches, 10¾ inches, 11¼ inches and 14 inches. Tests have proved the great strength of this link. In tests to destruction it has shown a breaking strength of 220,000 pounds. One link out of every heat is tested in this way.

AMONG THE NEW THINGS announced by The General Electric Company, are the following: A new electric timer which by combinations of two or more timers, or by using one in conjunction with other types of automatic time switches, it is possible to meet a wide range of process schedules.

The timer, designated as Type TSA-10, is "all electric"—timing is started by closing a switch. Resetting is automatic when the control circuit is deenergized. The timing period is readily adjustable over a wide range. When used as a process timer it can be arranged to operate a signal or terminate a process at the end of a predetermined period. By the use of relays and timers together, entirely automatic control can be provided for almost any process.

Unusually attractive and serviceable cases feature a new line of portable electrical instruments which has been announced by the General Electric Company. The instruments, designated as Type AP-9, include medium-size voltmeters, milliammeters, ammeters, and wattmeters.

A NEW ALL-METAL delay electric blasting cap, revolutionary in design, is announced by Hercules Powder Company. The outstanding features of the new detonator are the firing and delay elements that produce practically no gas when burning. These features make possible the use of a solid, one piece, ventless shell. The new delay cap, having no hot gas, cannot cause ignition of the dynamite. Needing no gas-escape openings in the shell no moisture can enter, a usual cause of misfires in other types of delays. According to the manufacturer, the new type detonator represents the greatest advance in detonator construction since the invention of the electric blasting cap. Hundreds of thousands of the new delays have been tested in the field with unvaryingly satisfactory results, according to Hercules explosives authorities. U. S. patents have been applied for on this new cap and are pending at this time.

A NEW ALL-PURPOSE aluminum welding flux, Oxweld Aluminum Flux, is announced by The Linde Air Products Company, 30 East 42nd Street, New York, N. Y. This new flux is intended to replace the two fluxes previously marketed, one for welding pure aluminum and the other for welding aluminum alloys. Oxweld Aluminum Flux does everything that, a few months ago, required two separate fluxes to do. It is a better aluminum flux, and its use will save time and improve the quality of the work.

A NEW STEEL ROOM TIE has been brought out by Bethlehem Steel Company, designated as their No. 2 Steel Mine Tie. By redesigning the section, the tie has been given 93.5 per cent greater strength than the tie which it replaces, while the weight of the section, 2.5 pounds per foot represents an increase of only 6 per cent.

This tie is equipped with two broad, stationary rail clips and four moveable clips of a new design. These new clips have greater bearing area on the base of the rail than the old clips and are, therefore, not easily loosened by vibrations of track-type, mechanical coal cutting and loading machines.

A NEW PUBLICATION entitled Type G High Speed Synchronous Motors has been issued by the Westinghouse Electric and Manufacturing Company. These motors with thermoguard protection are recommended for all types of constant speed machinery such as fans, blowers, compressors, pumps, Jordans, beaters, rubber mill lines, etc., and are fully described in the leaflet. Copies may be obtained from the nearest district office or direct from the advertising department, East Pittsburgh, Pa.

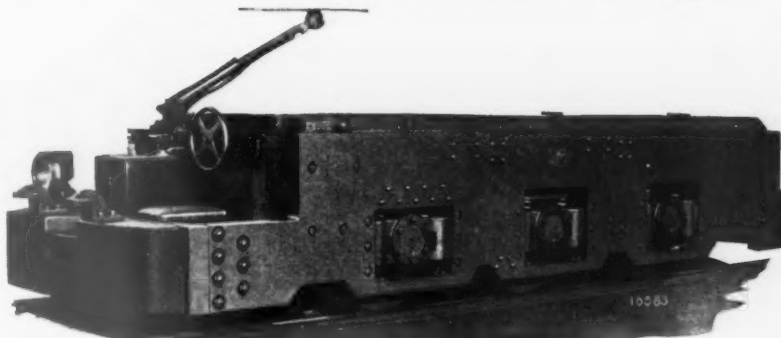
Locomotives that "Know How" mean Something -



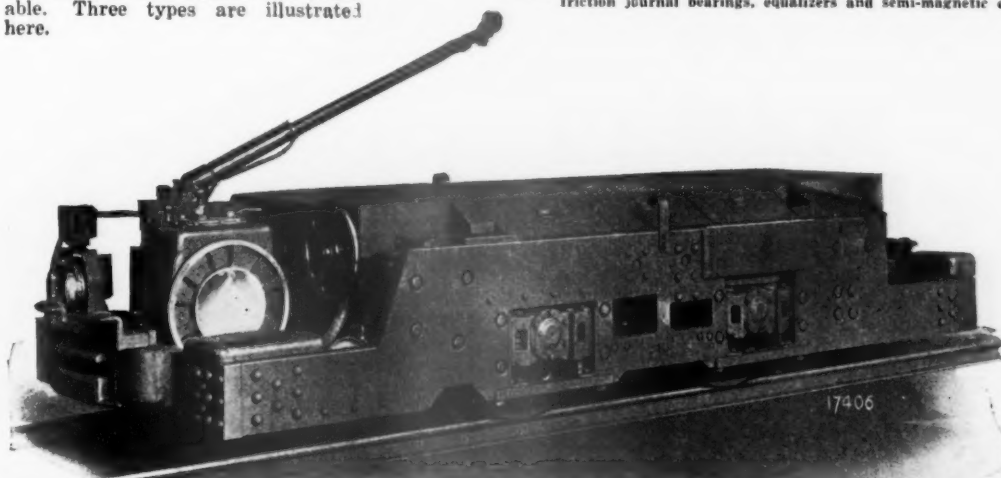
"Know how" value counts in anything. No matter what the product, the builder of long experience and thorough knowledge of the requirements, will build it better.

Jeffrey has been manufacturing Mine Locomotives for many years, and has had long experience in the exacting requirements a locomotive must meet. Hence, Mine Locomotives by Jeffrey continually set records of long service—low maintenance and low cost.

Every size from small Trammers to big Tandem Locomotives are available. Three types are illustrated here.



Jeffrey 25-ton Trolley Locomotive with 3 motors of 115 H. P. each. Equipped with anti-friction journal bearings, equalizers and semi-magnetic contactor control.



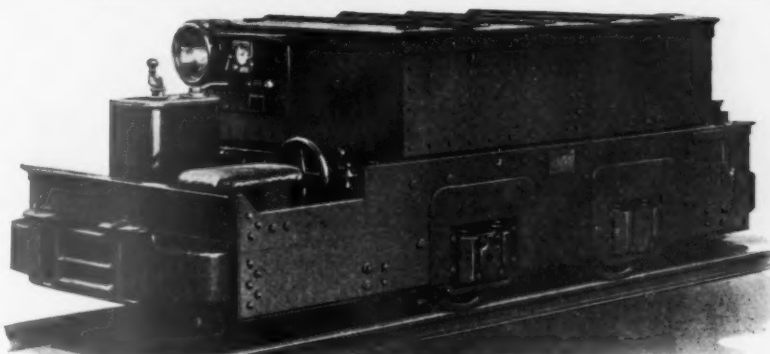
Locomotives
Trammers
Coal Cutters
Loaders
Conveyors
Drills
Tipple Equipment

Years of study of mine locomotive designs and applications enables Jeffrey to build locomotives to meet all kinds of conditions, resulting in a highly diversified line.

There are Trolley, Storage Battery and Combination Trolley and Storage Battery Locomotives in haulage or gathering types—sizes and types applicable for any kind of mine service, and suitable for various track gauges.

There are five types of Gathering Locomotives: Cable Reel, Straight Storage Battery, Combination Trolley and Storage Battery, Crab and Combination Crab and Reel. Storage Battery Locomotives can be of the Open or Government-Approved type.

Our New Catalog 555-A completely describes the Jeffrey line of Locomotives. Send for your copy NOW.



Jeffrey Gathering Locomotive, Storage Battery Type. 6,000-lb. Chassis (inside wheels). Battery box is pivoted to facilitate inspection and lubrication.

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LEGISLATION

(Continued from page 15)

ported that nearly 300,000 workers are on strike, which is the greatest unrest in labor circles since the general coal strike in 1922.

Meanwhile, the administration gets squarely up against the tariff problem. The Tariff Commission and the President are bombarded from many angles, and it is shown conclusively that many of the industries that the administration seeks to bring in under the national recovery program would sign their own death warrant if they accepted the provision of shorter hours and higher pay without definite assurance on the part of the administration that they will be protected against cheap foreign labor, and that the tariff not only will be maintained but that in many instances the presidential authority in Section 3 (e) shall be invoked. This is contrary to the proposals of the administration in its campaign documents where they urged a lowering of the tariff barriers, but it has been found that the national recovery program and lowered tariffs are not companionable.

In the mining field the situation in regard to codes is as follows:

Bituminous coal submitted 27 separate codes. The administration is now in process of eliminating or coordinating all of these codes into one master code, and the result of their efforts is anticipated daily.

Anthracyte coal has not yet submitted a code.

The copper industry filed its code with the N. R. A., in which it proposes to limit production from 20 to 30 percent, with an executive committee empowered to fix productive capacity of companies not listed under the code, which represents but 93 percent of all of the copper produced in this country. The code prohibits child labor, sets the minimum wage for unskilled labor at 35 cents an hour, except for New Mexico and Arizona, where the minimum is 30 cents an hour. They adopt the 40-hour week and accept the collective bargaining provision of the N. R. A., although they qualify this acceptance with the following paragraph:

"It is understood that satisfactory existing relationships between

employees and employers shall be permitted to continue. Nothing therein shall be constituted as denying to the individual employee the right to bargain individually for the terms and conditions of his employment."

The lead industries presented their code on August 4 but the code has not yet been made public and will not be released until a hearing has been set. It is understood, however, that they ask for the 40-hour week with a minimum of 35 cents per hour for labor.

The zinc industry presented its code early in August through the American Zinc Institute, which establishes approximately a 35 cents per hour working wage, with a further minimum for certain districts of 30 cents per hour, with the hours of labor fixed to not exceed the equivalent of 42 hours per week when averaged over a definite period.

The iron ore industry has not submitted a code.

Gold and silver and precious metals have not yet submitted a code, although the Colorado operators have worked out a plan to cover their particular needs.

Not the least of the administration's worries is the \$3,300,000,000 public works fund. It is understood at this writing (August 25) that more than one-third of this total appropriation has been placed.

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RODOLPHE LOUIS AGASSIZ, chairman of the board of the Calumet and Hecla Consolidated Copper Company, died Monday, July 31, at his home, Prides Crossing, Mass.

In 1894 he married Miss Maria Dallas Scott, who with a daughter, Mrs. Gordon C. Prince, survives him.

Mr. Agassiz, whose grandfather became interested in Michigan ore lands at the time of the Civil War, developed those mining interests steadily from the time of his graduation from Harvard in 1892. He was born in Cambridge on September 3, 1871, son of Alexander and Anna Russell Agassiz.

"MINERAL INDUSTRIES OF PENNSYLVANIA"

is the title of the new bulletin which represents a comprehensive and timely study of the economic aspects of all of the mineral producing and processing industries in Pennsylvania. It shows conclusively that these basic industries are declining with a corresponding decrease in the prosperity and economic well-being of the Commonwealth. It shows also the great necessity of making exhaustive studies of our remaining mineral resources, as well as the dire need of using to the highest degree the knowledge being made available by mineral engineering and technology. A limited supply of the bulletin is available at \$1.00 per copy. Address Dr. Charles Reittel, Director, Greater Pennsylvania Council, Harrisburg, Pa.

REVIEWING the leading industrial and trade associations of the United States, *Fortune Magazine* in its current issue features the organization of the Pennsylvania anthracite producers. Of the Anthracite Institute, under the presidency of General Brice P. Disque, the magazine says:

"The Anthracite Institute has been devising all sorts of machines and techniques for getting the most out of anthracite. At the Century of Progress the institute proudly shows its completely automatic domestic heating plant, which carries coal from the fuel bin to the fire box, burns it under automatic thermostatic control, and carries the ash out of the cellar. Another current achievement is the gas producer machine, which is expected to open up a market for 18,000,000 tons of anthracite.

O. C. Hoffman, Pres. Established 1902 L. H. Hoffman, Treas.

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a new Yearbookall Convention Papers and Mechanization Surveys

At the Tenth Annual Convention of Practical Coal Operating Men the Program Committee—65 representative and prominent men—selected the vital and important production operations, and then selected sixty-two leading operators to present and discuss material and data on the lowest-cost-ways in practically every phase of mining.

All their data and material plus intimate underground practice surveys is being published in the 1933 edition of "Coal Mine Mechanization Yearbook"—a very valuable publication for information on how operators are meeting their problems with profitable low-cost methods.

These 11 main classifications and 30 sub-groups indicate the vast amount of detailed information available in this book.

Face Preparatory—Coal Saw—Machine Bits—Blasting.
Loading—Conveyors—Mechanical Loaders—Rock Tunnel.
Haulage—Main Line—Gathering—Mine Car Design.
Power—Economies—Steam—Purchased vs. Generated.
General—Lubrication—Machine Maintenance—Fan Economy.
Roof Action—Pillar Recovery—Mine Timbering.
Surface Preparation—Sizing—Wet and Dry Cleaning—Dedusting—Drying Washed Coal.
Safety—Accident Prevention—Economies—Mechanical Mining.
Utilization—Competitive Fuels.
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Its distinctive design gives maximum protection to the head, face and neck . . . its tough, fracture-resisting Micarta construction is far superior to ordinary fibre because it never softens from mine water or perspiration. The comfortable cushioned linings conform easily to the shape of the head and assure good, cool ventilation without sacrificing any of its protective features. Lamp-holders for various types of lamps are built into the design of the cap. Write for descriptive bulletin and new low prices.

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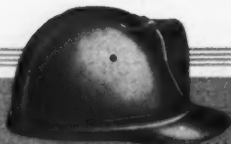
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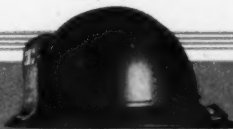


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Type C Skullgard is outstanding for its extreme lightness in weight, its flexible trim of selected waterproof and acid-resisting fabric that effectively sheds water and solid particles.

